

EDITORIAL STAFF

E. L. SHANER
Editor-in-Chief
IRWIN H. SUCH
Editor
WM. M. ROONEY
News and Market Editor
JAY DEEULIS
Engineering Editor
J. D. KNOX
Steel Plant Editor
GUY HUBBARD
Machine Tool Editor
N. S. CADOT
Art Editor
ALLEN G. GRAY
Consulting Editor

ASSOCIATE EDITORS

J. CAMPBELL • FRANK R. BRIGGS
NANCE BELL • WALTER F. TORGER
DAN REEBEL

ASSISTANT EDITORS

HENRY J. HOLTZ • DOLORES K. BLAHA
HEN S. MORGAN • L. J. SKUDERIN
IRWIN L. KARPICK • M. T. BORGERHOFF

RESIDENT EDITORS

E. C. KREUTZBERG
Washington Editor
B. K. PRICE
Eastern Editor, New York
L. E. BROWNE
Associate Editor, New York, Boston
J. C. SULLIVAN
Pittsburgh Editor
A. H. ALLEN
Detroit Editor
E. F. ROSS
Chicago Engineering Editor
HOWARD C. TUTTLE
Chicago News and Market Editor
VINCENT DELPORT
European Editor, London

EDITORIAL CORRESPONDENTS

R. W. KINCEY, *Birmingham*
L. C. FELDMAN, *Buffalo*
SAMUEL S. CARR, *Cincinnati*
MAC L. HUTCHENS, *St. Louis*
GEORGE R. REISS, *Youngstown*
BERT D. LYNN, *Los Angeles*
ROBERT BOTTORFF, *San Francisco*
R. C. HILL, *Seattle*
C. K. CATBS, *Dallas*
F. S. TOBIN, *Toronto*
J. A. HORTON, *Birmingham, Eng.*
LEON JAUDON, *Paris, France*
JACQUES FOULON, *Liege, Belgium*
HERBERT GROSS, *Dusseldorf, Germany*

MAIN OFFICE

Penton Building, Cleveland 13, Ohio
Main 8260

BRANCH OFFICES

New York 17 16 East 43rd St.
Murray Hill 2-2581
Chicago 11 520 North Michigan Ave.
Whitehall 4-1234
Pittsburgh 19 2806 Koppers Bldg.
Atlantic 3211
Detroit 2 6560 Cass Ave.
Madison 3024
Washington 4 1123 National Press Bldg.
Executive 6849
Los Angeles 28 1452 N. Seward St.
Hudson 2-4439
London .2 Caxton St., Westminster, S.W.1

Business Staff on Page 4

NEXT WEEK...

Induction Brazing with
Silver Alloys
Steel Plant Efficiency Improved
By Wireless Telephone
Production of Hot and Cold
Rolled Strip and Sheets—VII
Expansion Program Increases
Capacity of Sparrows Point

STEEL

The Magazine of Metalworking and Metalproducing

VOL. 125, NO. 2

JULY 11, 1949

NEWS

★ As the Editor Views the News	49
★ News Summary	53
Steel Delivery Time Shortened	55
Steel Strike Moves Nearer	57
O'Mahoney Price Bill Gets White House Support	58
Postwar Forecasts Miss for Consumer Goods Demand	59
Automotive Stampers Doing Well	60
Machine Tool Inquiry Gains	61
★ Windows of Washington	62
Europe's See-Saw Economy Still Unbalanced, ECA Says	65
U.S. Steel Studies Warehouse Market	66
★ Calendar of Meetings	67
★ Mirrors of Motordom	69
Otis To Make Elevator Doors	72
★ Briefs	73
★ The Business Trend	74
★ Men of Industry	76
★ Obituaries	81
★ Construction and Enterprise	153

TECHNICAL

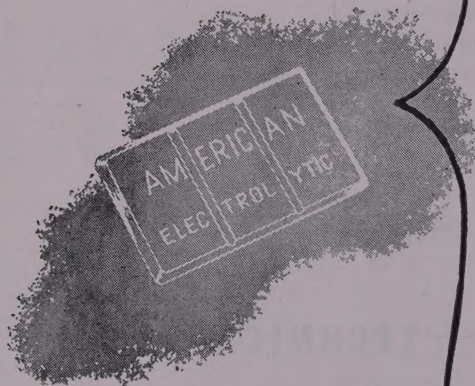
★ Engineering News at a Glance	83
Higher Temperature Refractories Goal of New Laboratory	84
How To Procure Tools	87
Developments in Corrosion Resistant Coatings, Rare Metals	90
Hydraulic Presses Speed Electric Motor Assembly	98
Continuous Rod Drawing, Straightening, Polishing	100
★ Progress in Steelmaking—Production of Hot and Cold-Rolled Strip and Sheets—Part VI	103
Boring-Facing Operation Handles Two Tubes Simultaneously	119
Tube Welding Processes Aid in 10-Fold Production Increase	120
★ New Products and Equipment	123
★ Helpful Literature	127

MARKETS

★ Market Summary	129
★ Market Prices and Composites	130
Copper Reverses Price Trend	134
★ Advertising Index	160

Editorial Index available semiannually; STEEL also is indexed regularly by Engineering Index Inc., 29 West 39th St., New York 18

★ Denotes Regular Features.



99.99+%

slab
zinc

American
Electrolytic

a reliable source for die casting requirements



AMERICAN ZINC SALES CO., Distributors

for AMERICAN ZINC, LEAD & SMELTING CO.

COLUMBUS, OHIO

CHICAGO

ST. LOUIS

NEW YORK

July 11, 1949

Time for Action

President Truman's almost single-handed victory at the polls last fall was attributed to rallying support from labor resulting from his bitter attack on the Labor-Management Relations (Taft-Hartley) Act of 1947 and his promise that it would be repealed almost immediately by a Democratic majority in Congress. In effect, this would have meant a return to the Wagner Labor Relations and Norris-LaGuardia Anti-Injunction Acts.

The Taft-Hartley Act outlawed the closed shop, stopped such unfair labor practices as secondary boycotts and jurisdictional strikes, prohibited employees of the government from striking, provided a 60-day cooling off period for negotiations between employers and employees in case of disputes, prevented national emergency strikes for a period of 80 days and required union officers to sign anti-communist affidavits and file financial statements.

In the weeks following the Nov. 2 election, Taft-Hartley was believed destined for early extinction. But, as the months dragged on it became increasingly evident that a coalition of Southern Democrats and surviving Republicans could provide some rough going for Truman's legislative program. Last May, the administration received its first rebuff when the House sidestepped action on T-H by referring the entire labor matter back to committee. Just five weeks ago, the Senate finally got around to consideration of a revamped law. Senator Taft submitted an amendment making it possible for the President, in dealing with national emergency strikes, to use the injunctions provided by T-H or to seize plants. A second Taft amendment otherwise substituted an improved T-H for the administration's bill.

Both amendments passed by small margins and T-H remains virtually unscathed, but let no one be lulled into the belief that the battle is over. On Nov. 7, 1950, the voters will go to the polls again to elect the 82nd Congress. Administration forces, backed by the labor unions, can be expected to campaign vigorously for the slightly larger majorities needed to effect its policies.

With the over-confidence of last November still a vivid background, isn't it time for those who favor legislation fair to employer and employee alike to take preventive action?

* * *

BACK TO NORMAL: As third quarter gets under way it is evident the long-awaited balance between steel demand and supply has been achieved. Supply shortages, which plagued consumers throughout the postwar period and gave rise to "gray" markets and premium prices, finally have been overcome.

Data collected by STEEL's district editors show mill deliveries in most steel products once again are back on normal schedules. Compared with only three months ago, delivery time has been shortened markedly on practically all the major items; some are available for immediate ship-

ment. At beginning of second quarter consumer quotas were in effect and were being strictly adhered to. Large tonnages of steel were being allocated under government sponsorship. Only a few products, chiefly alloy steel and specialties, were in balance with demand, or in excess supply.

Things are different today. Consumer quotas now are but a faint shadow in the markets as the steel producers eat away their order backlogs. There no longer is need for voluntary allocations. Three months ago, STEEL's data show, delivery time required on 20 important

AS THE EDITOR VIEWS THE NEWS

steel products averaged 57 days. Today, time required averages only 34 days.

So, midyear finds the steel shortage a thing of the past, a fact strikingly brought out by the changed relationship of buyer and seller. Instead of the buyer asking: "How soon can I get delivery?", the steel producer today is asking the prospective customer: "How soon do you want delivery?" demonstrating forcefully the restored prestige of the buyer. —p. 55

* * *

COLD FACTS AND FIGURES: John S. Bugas, Ford's industrial relations vice president, in a memorandum to the auto workers' union during the current wage negotiations, cites some cold, hard facts on the wage picture which the union can scarcely pass over lightly.

He noted that straight-time hourly rates as of April were higher than those of Ford's competitors and stood at \$1.66 an hour, comparing with 90 cents ten years ago. Also, he pointed to an increase of 18½ cents an hour to cover hidden payroll benefits in the form of payments for vacations and holidays, social security, unemployment compensation, salaries of union committeemen and group insurance. Further, inclusion of overtime or shift premium time payments would add another 7½ cents, making a true labor cost to the company of \$1.92 per hour at current rates. Meanwhile, the cost-of-living index has declined about 4½ cents an hour over the past year, giving workmen, in effect, a wage increase of that amount.

The union will have a difficult time labeling these figures as a "flight into fancy," as it did Ford's proposal of an 18-month moratorium on economic demands. —p. 69

* * *

OLD ARGUMENT: Every now and then the old argument over whether automobiles are bought for transportation or for swank appearance and style pops up. It seems to provoke discussion at the least excuse and particularly so these days when much thought is being given to buyers' desires in developing sales and production policies for the competitive marketing of products of all kinds.

In the automobile industry, of course, the argument may be somewhat academic so long as the motor car builders can sell about everything they can turn out on wheels without too much trouble. Nevertheless, thinking people in the industry believe a showdown between the so-called conservative viewpoint and the more unconventional and style-conscious concept

may be not too distant. In fact, some think the battle lines will be drawn this fall as auto demand declines seasonally and the two schools of thought tussle a little more strenuously for the customer's favor. —p. 69

* * *

REFRACTORY RESEARCH: If "tools" of research are indicative, then researchers conducting investigations in the new Baltimore research and development facilities recently opened by General Refractories Co., Philadelphia, should have no trouble in reaching their goals.

The new laboratory, regarded by observers as one of the most advanced units of its kind, will enable technicians to strive for higher temperature refractories, and to intensify investigations on the all-basic open-hearth furnace. Already phases of the latter program have passed pilot plant stage with encouraging results, and it is estimated that final development of the unit will boost steel production as much as 30 per cent. —p. 84

* * *

SERVICE PLUS: One of the steel industry's best "commodities" is service. To supply customers with the correct product, for example, many steel producers make it standard practice to study user's methods of processing, often becoming as well acquainted with the customer's operations and problems as the customer himself.

This is strikingly apparent in this week's continued discussion of hot and cold-rolled strip and sheets which Charles L. McGranahan, assistant general superintendent, Jones & Laughlin Steel Corp.'s Pittsburgh works, began in the June 6 issue. He points out that when sheets are manufactured for vitreous enamel coating, in reality a special glass which is fused to the steel's surface, they must be made to withstand temperatures of 1500 to 1600° F—not once but several times as additional coatings are applied.

Subjecting carbon sheet steel to such temperatures and making a bond with a material of decidedly different physical properties result in difficulties such as excessive oxidation or blisters. These obstacles, however, were finally overcome by developing a sheet of low carbon, manganese, phosphorus and sulphur content, processed under closely controlled conditions.

—p. 106

Irwin H. Such

EDITOR

News Summary

STRIKE LOOMS—A steelworkers strike, possibly by July 16, moved dangerously close to reality last week when U. S. Steel Corp. (p. 57) refused a union demand for a wage increase, proposed that costs of a broad program of insurance be borne equally by participating employees as well as by the company, and suggested that the question of whether pensions should be discussed at this time be submitted to a board of conciliation and arbitration for decision. The corporation's answer to the union's demand for a fourth-round wage boost and company-financed insurance and pension programs resulted in the recessing indefinitely of negotiations. The union is free to strike after July 15, and to plan a course of action its wage policy committee was called to meet July 12. Some observers think the union will feel compelled to strike; others say that in view of the business decline the union will avoid a strike if possible.

QUICKER DELIVERIES—As third quarter of 1949 gets underway, the demand for and supply of steel is practically in balance again (p. 55) after several years of intense pressure for supplies. While some consumers still find it necessary to wait for certain products, the steel shortage, generally speaking, is over and most mills can ship tonnage on normal schedules.

BACK PRICE BILL.—Additional support for the O'Mahoney bill to legalize freight absorption came to light last week (p. 58) when the House was told by its majority leader the bill has presidential approval as well as the backing of the Federal Trade Commission and the Department of Justice. As a result it is expected the measure will be enacted quickly into law by the House. The Senate passed it several weeks ago.

FORECASTERS WRONG—Even the lowest of several widely circulated forecasts of postwar markets for consumers' durable goods has not been attained on an average annual postwar basis, according to the American Iron & Steel Institute (p. 59). This, the institute says, is particularly true concerning houses, passenger automobiles and refrigerators. Nevertheless, ownership of homes, autos and household appliances is wider than ever before in the United States.

BUSINESS WEATHER—While some companies continue to lay off employees or suspend operations because of reduced demand for products, Northrop Aircraft Inc., Hawthorne, Calif., is expanding its personnel to a post-war peak of 8000 because of new contracts from the U. S. Air Force. Stamping plants concentrating on work for the automotive industry have been enjoying much better business than other pressed metal shops (p. 60) but expect to experience a business drop if automakers cut output. Machine tool makers are receiving an increasing number of inquiries concerning new machines. This, according to the president of the National Machine Tool Builders' Association, reflects a growing interest of manufacturers in cutting costs and broadening markets (p. 61).

EMPHASIS ON SELLING—With the return of a buyers' market there is increasing effort to sharpen up the sales ability of salesmen. Another evidence of this is a course in machine tool sales engineering July 11-16 at Cornell University, Ithaca, N. Y.

HERE AND THERE IN INDUSTRY—Ford Motor Co. has acquired a site near Buffalo for a large plant to produce passenger automobile stampings and subassemblies (p. 58) and Bethlehem Steel Co. has announced it will begin immediate expansion of cold-rolled sheet and strip facilities at its nearby Lackawanna, N. Y., plant in order to supply Ford with steel. . . . United States Steel Supply Co., Chicago, is making a nationwide study of the needs of steel warehouse customers (p. 66) in order to be prepared to meet their future requirements. . . . Otis Elevator Co., Jersey City, N. J., will abandon a traditional practice of the elevator industry in subcontracting for entrance doors and will manufacture them in its own plant at Harrison, N. J. (p. 72).

AS THE EDITOR VIEWS THE NEWS

steel products averaged 57 days. Today, time required averages only 34 days.

So, midyear finds the steel shortage a thing of the past, a fact strikingly brought out by the changed relationship of buyer and seller. Instead of the buyer asking: "How soon can I get delivery?", the steel producer today is asking the prospective customer: "How soon do you want delivery?" demonstrating forcefully the restored prestige of the buyer. —p. 55

* * *

COLD FACTS AND FIGURES: John S. Bugas, Ford's industrial relations vice president, in a memorandum to the auto workers' union during the current wage negotiations, cites some cold, hard facts on the wage picture which the union can scarcely pass over lightly.

He noted that straight-time hourly rates as of April were higher than those of Ford's competitors and stood at \$1.66 an hour, comparing with 90 cents ten years ago. Also, he pointed to an increase of 18½ cents an hour to cover hidden payroll benefits in the form of payments for vacations and holidays, social security, unemployment compensation, salaries of union committeemen and group insurance. Further, inclusion of overtime or shift premium time payments would add another 7½ cents, making a true labor cost to the company of \$1.92 per hour at current rates. Meanwhile, the cost-of-living index has declined about 4½ cents an hour over the past year, giving workmen, in effect, a wage increase of that amount.

The union will have a difficult time labeling these figures as a "flight into fancy," as it did Ford's proposal of an 18-month moratorium on economic demands. —p. 69

* * *

OLD ARGUMENT: Every now and then the old argument over whether automobiles are bought for transportation or for swank appearance and style pops up. It seems to provoke discussion at the least excuse and particularly so these days when much thought is being given to buyers' desires in developing sales and production policies for the competitive marketing of products of all kinds.

In the automobile industry, of course, the argument may be somewhat academic so long as the motor car builders can sell about everything they can turn out on wheels without too much trouble. Nevertheless, thinking people in the industry believe a showdown between the so-called conservative viewpoint and the more unconventional and style-conscious concept

may be not too distant. In fact, some think the battle lines will be drawn this fall as auto demand declines seasonally and the two schools of thought tussle a little more strenuously for the customer's favor. —p. 69

* * *

REFRACTORY RESEARCH: If "tools" of research are indicative, then researchers conducting investigations in the new Baltimore research and development facilities recently opened by General Refractories Co., Philadelphia, should have no trouble in reaching their goals.

The new laboratory, regarded by observers as one of the most advanced units of its kind, will enable technicians to strive for higher temperature refractories, and to intensify investigations on the all-basic open-hearth furnace. Already phases of the latter program have passed pilot plant stage with encouraging results, and it is estimated that final development of the unit will boost steel production as much as 30 per cent. —p. 84

* * *

SERVICE PLUS: One of the steel industry's best "commodities" is service. To supply customers with the correct product, for example, many steel producers make it standard practice to study user's methods of processing, often becoming as well acquainted with the customer's operations and problems as the customer himself.

This is strikingly apparent in this week's continued discussion of hot and cold-rolled strip and sheets which Charles L. McGranahan, assistant general superintendent, Jones & Laughlin Steel Corp.'s Pittsburgh works, began in the June 6 issue. He points out that when sheets are manufactured for vitreous enamel coating, in reality a special glass which is fused to the steel's surface, they must be made to withstand temperatures of 1500 to 1600° F—not once but several times as additional coatings are applied.

Subjecting carbon sheet steel to such temperatures and making a bond with a material of decidedly different physical properties result in difficulties such as excessive oxidation or blisters. These obstacles, however, were finally overcome by developing a sheet of low carbon, manganese, phosphorus and sulphur content, processed under closely controlled conditions.

—p. 106

Irwin H. Such

EDITOR

HERE AND THERE IN INDUSTRY—Ford Motor Co. has acquired a site near Buffalo for a large plant to produce passenger automobile stampings and subassemblies (p. 58) and Bethlehem Steel Co. has announced it will begin immediate expansion of cold-rolled sheet and strip facilities at its nearby Lackawanna, N. Y., plant in order to supply Ford with steel. . . . United States Steel Supply Co., Chicago, is making a nationwide study of the needs of steel warehouse customers (p. 66) in order to be prepared to meet their future requirements. . . . Otis Elevator Co., Jersey City, N. J., will abandon a traditional practice of the elevator industry in subcontracting for entrance doors and will manufacture them in its own plant at Harrison, N. J. (p. 72).

buying alloys?

only at Ryerson

do you get these three:

1

Stocks of selected quality

2

Test-proven performance

3

A guide to heat treatment

...yet Ryerson gives you this three-way guarantee of satisfaction at no additional cost. So contact the Ryerson plant nearest you for any alloy steel requirement.

OTHER RYERSON PRODUCTS

Bars—Stainless, hot rolled and cold finished carbon steel, reinforcing

Structurals—I Beams, H Beams, channels, angles, etc.

Plates—Sheared and U. M., Inland 4-Way Floor Plate

Sheets—Hot and cold rolled, many types and coatings

Tubing—Seamless and welded mechanical and boiler tubes

Stainless—Allegheny metal bars, sheets, plates, tubes, etc.

Machinery & Tools—For metal fabrication

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS: NEW YORK, BOSTON, PHILADELPHIA, DETROIT, CINCINNATI, CLEVELAND, PITTSBURGH, BUFFALO, CHICAGO, MILWAUKEE, ST. LOUIS, LOS ANGELES, SAN FRANCISCO.

Steel Delivery Time Shortened

Quicker deliveries available from mills on practically all products at beginning of third quarter. Reflects attainment of supply-demand balance

SHRINKING mill order backlogs and shortened delivery periods mark attainment of demand-supply balance in the steel markets as third quarter gets under way. While some consumers still find it necessary to shop around for certain products, generally speaking, the steel shortage is over, with most mills now in position to ship tonnage on what are considered normal schedules.

Survey by STEEL's district editors shows mill delivery periods noticeably shortened as compared with only three months ago. As shown in the accompanying graph, deliveries have been shortened on every major product. While the shipment data are not absolute and are subject to generous interpretation due to the fact only approximations are possible in virtually every instance, and also because of the variance in delivery position of the individual producers and the separate product specifications, they definitely reflect the marked change in steel supply conditions that has taken place.

At beginning of second quarter

delivery time required for all the products included in the survey averaged 57 days, and ranged from a low of 33 days on silicon sheets to a high of 80 days on galvanized sheets. At the beginning of third quarter average shipment time is estimated at 34 days, with stainless sheets the low at 21 days, and galvanized delivery time highest at 65 days.

Reports of STEEL's district editors follow:

Chicago

ALL important mills in this district are booked solidly through July. Several mills will close for two weeks during the month and bookings in certain products, cold-rolled sheets, galvanized sheets, shapes and plates with some mills extend into August or a little beyond. Alloy bars, cold-finished bars to less extent, electrical sheets, and with one mill, wide flange beams and floor plate, are in surplus supply though delivery requires as long as 30 days from time of order placement. As a general thing, a

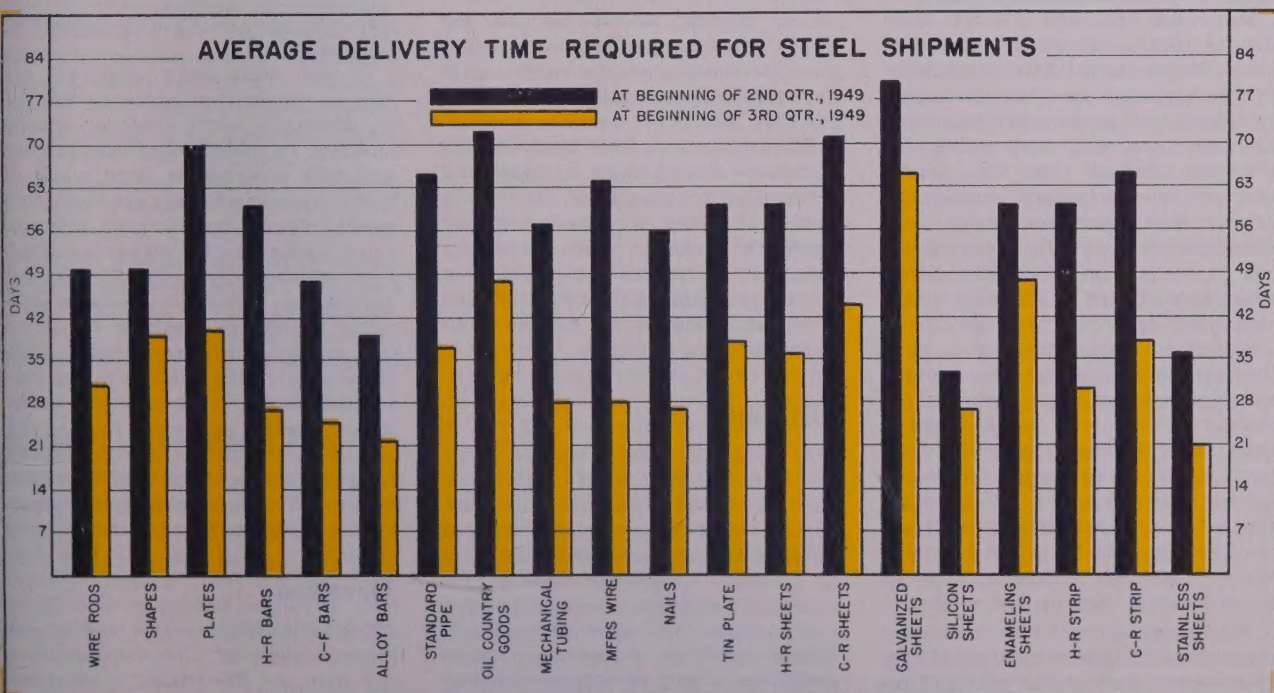
customer seeking an average size tonnage of nearly all products would get his steel by early August, except for cold-rolled sheets, cold-rolled strip and galvanized sheets.

Most succinct remark heard in the market here describing the change in conditions since beginning of second quarter is that when the customer asks: "How soon can I get it?" the steel sellers pointedly ask: "How soon do you want it?" This demonstrates how the seller is looking for business today and is anxious to take best possible care of prospective buyers.

Only one company in the district continues on a strict quota system. All of them are eager for new business, and a number indicate that if the customer is in a hurry for steel he can be squeezed into rolling schedules before Aug. 1 where requirements call for regular carbon specifications. Delivery time of 30 days is considered normal on most orders, with 75 days normal on special analysis orders.

Philadelphia

IT IS difficult to accurately determine shipment schedules here because deliveries vary on the different specifications. On some sizes of bars, for instance, a mill may have just started its rolling cycle and can do nothing for a few weeks; on



other sizes a mill may be just setting up its schedule and can give pretty prompt service.

In mechanical tubing there appears to be quite a variance in the delivery situation with respect to the various sizes, some of which are more popular than others. There are some large producers that can do much better on certain products for delivery in the East than they can for delivery in the Midwest. Plate deliveries of one producer around the Chicago district, for example, are much tighter than in this area.

On certain products, such as standard pipe, the mills have been on a month to month basis for a long time, and while supply is easier, it is difficult to appraise shipments on the basis of a definite time schedule.

Detroit

WITH MOST "conversion" steel business for automotive accounts now entirely cleaned up, or destined to be so inside of 30 days, steel sellers here are finding the market returning to normal, with deliveries on hot-rolled products around three weeks and cold-rolled four to five weeks. Three months ago, most tonnage of flat-rolled automotive steels was being allocated by the larger mills and a substantial volume of ingot conversion work was still in process.

Automobile plants still have some inventory of premium steel received on conversion arrangements and they are trying to work it off as rapidly as possible and to balance out inventories in the interest of cost reduction. Few steel users are buying ahead now much beyond 30 days.

Meanwhile, car and truck production is continuing at a near-record pace. Prospects point to continuation of the prevailing rate through August or September, much depending upon whether there is a steel strike this summer. Outlook for the fourth quarter is cloudy and predictions beyond September are scarce. At that time seasonal influences will begin to be felt on automotive sales, with the likelihood of assembly schedules being tapered appreciably.

Stainless steel strip has gone through several cycles of easiness and tightness, at present being definitely in a buyers' market and a local mill offering practically overnight delivery. Tool steels are plentiful and deliveries good. Wide sheets for autobody applications, until recently inclined to be in short supply, are now abreast of demand and can be obtained in four to five weeks.

Steel suppliers note that customers' inventories have been trimmed sharply since the first of the year and re-



PRODUCTION SPEEDER: One of the many welding positioners built by the Mississippi Valley Structural Steel Co. to speed work is being used in ship hull subassembly fabrication at its Melrose Park, Ill., plant. The positioner pictured has a capacity of 40 tons

newed buying should not be far away. The specific case of a small manufacturing plant is cited, which had inventory of \$24,000 worth of steel on Jan. 1, not considered excessive at the time. By Mar. 31 this had been worked down to \$4000 and production continued to hold to a fair level. New purchasing of steel cannot be deferred much longer by this user and there are others in a similar position. Anticipation of lower prices of course has had an additional delaying effect.

Pittsburgh

FOR ALL practical purposes delivery time on most steel products is back to normal. While definite comparison with three months ago is difficult because most products were on a customer allotment basis at that time, deliveries on average product specifications are appreciably shortened today. On a few items quota rationing is still in effect, including

standard pipe, oil country goods and tin plate.

In tool steels many producers are able to supply from stock except for an unusually large order or special analysis. In cold-finished bars prompt shipment is available from stock in many common sizes and grades though special shapes are extended seven to eight weeks. In the flat-rolled products, which were among the tightest during the period of shortage, hot-rolled sheets are available for delivery in three to four weeks, cold-rolled sheets, five to seven weeks, galvanized sheets, seven to eight weeks, silicon sheets, three to five weeks, enameling sheets, six to seven weeks, hot-rolled strip, three to four weeks, cold-rolled strip, three to seven weeks, stainless sheets, three to five weeks.

Cleveland

STEELMAKERS in this district are fairly booked into August but delivery time, on the whole, is shortened

in a number of products as compared with three months ago. Sellers here are engaged to considerable extent in filling automotive requirements and the pressure for shipments from that industry has not yet relaxed. For the most part shipments from district mills still are going out on a quota basis. However, indications are quotas will be abandoned on practically all products next month by which time it is expected the mills will have become pretty well caught up on commitments.

Indicative of the change in delivery conditions in the district is the fact that wire rods now are available in 45 days time against 60 days three months ago; hot-rolled bars, 30 days against 60 days; mechanical tubing, 30 days against 60 to 90; nails, 45 days against 60; hot-rolled and cold-rolled sheets, 60 days compared with 80. Galvanized sheets are unchanged at 90 days, hot-rolled strip at 60 days and cold-rolled strip at 60 days.

Birmingham

THIS is the picture in this area. Cotton ties, rails and galvanized sheets still are on a quota and are sold out through the balance of the year. Wire rods, shapes, plates, nails, hot and cold-rolled sheets and hot-rolled strip are available for delivery in two to three months. All products were on customer quota or voluntary allocation at the start of second quarter.

St. Louis

STEEL product shipment time has shortened noticeably in this area over the past three months. For example, wire rods now are available in two weeks as against 6 to 8; hot-rolled bars, 4 weeks against 12; standard pipe, 8 weeks against 16 to 24; mechanical tubing, 4 to 6 weeks against 8 to 10; manufacturers wire, 8 weeks compared with 16; tin plate, 7 weeks compared with 11; cold-rolled sheets, 6 weeks against 10; electrical sheets, 4 against 6; enameling sheets, 5 against 7; hot-rolled strip, 2 against 8; cold-rolled strip, 6 against 10. Galvanized sheets are unchanged from three months ago at 16 weeks.

Granite City President Dies

HAYWARD NIEDRINGHAUS, president and general manager, Granite City Steel Co., Granite City, Ill., died July 7 at his summer home in Rockport, Mass. He was 59. Mr. Niedringhaus started with the steel firm in 1911 as a laboratory assistant and became president and general manager in 1929.

Steel Strike Moves Nearer

Union schedules meeting of wage policy committee to consider next step after U. S. Steel refuses wage increases and makes counterproposals on insurance and pensions

A STEELWORKERS' strike loomed more menacingly at the close of last week as United States Steel Corp. rejected demands of the United Steelworkers of America—CIO.

Negotiations between the corporation and the union were recessed indefinitely and the union promptly scheduled a July 12 meeting of its wage policy committee to discuss strike action.

Because it gave notice May 15 that it wanted a labor contract reopening, the union would be free to strike after July 15. In some quarters there was belief the union would feel compelled to strike. Other observers believed that in view of the business decline the union would prefer to avoid a walkout. This led to speculation the union might be aided in averting an immediate strike through a request from President Truman to get together with him and corporation officials in an effort to agree.

Cyrus Ching, federal labor conciliator, meets with U. S. Steel officials and union representatives July 11 in an effort to solve the dispute.

Increase Rejected—In replying to union demands, U. S. Steel Corp. rejected a general increase in wages, said that cost of any extensive program of insurance should be borne equally by the employer and participating employees, and proposed that the question whether pensions can be discussed under the present labor contract reopening be submitted to a board of conciliation and arbitration.

Philip Murray, president of the Steelworkers union, said that if a strike starts July 16, 189 companies whose agreements fix July 16 as the deadline would be affected. These companies, most of which are basic steel producers, employ a little more than 500,000 people.

Concerning its position on wages, U. S. Steel said, "We are convinced that no sound reasons justify an increase at this time. Increases in rates of pay in these days of business uncertainties will, in our judgment, seriously injure the national economy and will result in hardship and further shrinkage of employment opportunity for those on whose behalf the increase is now sought.

Not the Time—"A period of slackening business activity throughout the country is certainly no time in which to increase costs of production

through imposition of higher employment costs unless there is a clear and proper justification for doing so. In our opinion, no such justification now exists in our situation."

Regarding insurance demands of the union, the corporation said the requests are for a program far exceeding programs of this character now in effect elsewhere in the country. Pointing out that the union had proposed that the entire cost of such a program be paid for by the company, the corporation said, "We remain convinced that any such program must be based on the sound American tradition of mutual assistance rather than on an act of enforced paternalism as the union seems to propose." Accordingly, the corporation said any cost of an extensive program of insurance must be divided equally between the employer and participating employees.

Pension Arbitration—The corporation continued to insist that the subject of pensions has no rightful place in current negotiations, that wages and insurance were the only two subjects that legally could be discussed under the present reopening of the labor contract. However, the union has maintained that pensions are included under an expansive definition of wages. Consequently, the corporation proposed that the questions whether pensions can be discussed be presented to a board of conciliation and arbitration for decision.

Elsewhere on the labor front the Steelworkers union has served notice it will strike nine plants and mines of Aluminum Co. of America, July 31.

Proposals Turned Down—At Canton, O., Timken Roller Bearing Co. turned down proposals of the United Steelworkers for a new contract, and sent a letter to all Timken employees explaining that the wage and other demands made upon the company by the union would increase yearly production costs far beyond the point of business safety.

In the automotive field, Ford Motor Co. was continuing to insist that wage rates be stabilized for 18 months. However, immediate threat of a strike at Ford was alleviated by an agreement with the United Automotive Workers—CIO that the present contract be extended on a day-to-day basis after its expiration July 15. At Chrysler Corp., where wage talks

were underway last week with the UAW, the company was refusing to accept the union's contention that pension and health insurance demands can be discussed now. Employees of Mack Trucks Inc. have voted to strike, but no date has been set for it. Negotiations continued last week.

While negotiations between bituminous coal operators and the United Mine Workers were in recess until July 12, the miners were following the orders of John L. Lewis to work three days until further notice.

Firing of Foremen Upheld

CARNEGIE-ILLINOIS Steel Co., a United States Steel Corp. subsidiary, did not violate the law when it discharged 89 foremen who refused to perform maintenance work during a 1946 steel strike, NLRB ruled.

A three-member majority of the board held the discharges were legal because the foremen's failure to work at the company's Gary, Ind., plant was such a serious breach of their duty to the company as to remove them from protection of the Wagner act under which the case arose.

New Furnace Begins Operations

SUCCESSFUL tapping of the initial test heat last week marked the start of melting operations of Allegheny Ludlum Steel Corp.'s 70-ton electric furnace at its Brackenridge, Pa., plant. This furnace, which is one of the largest top-charge electric furnaces ever constructed, was the first to be completed at the company's new electric melting department.

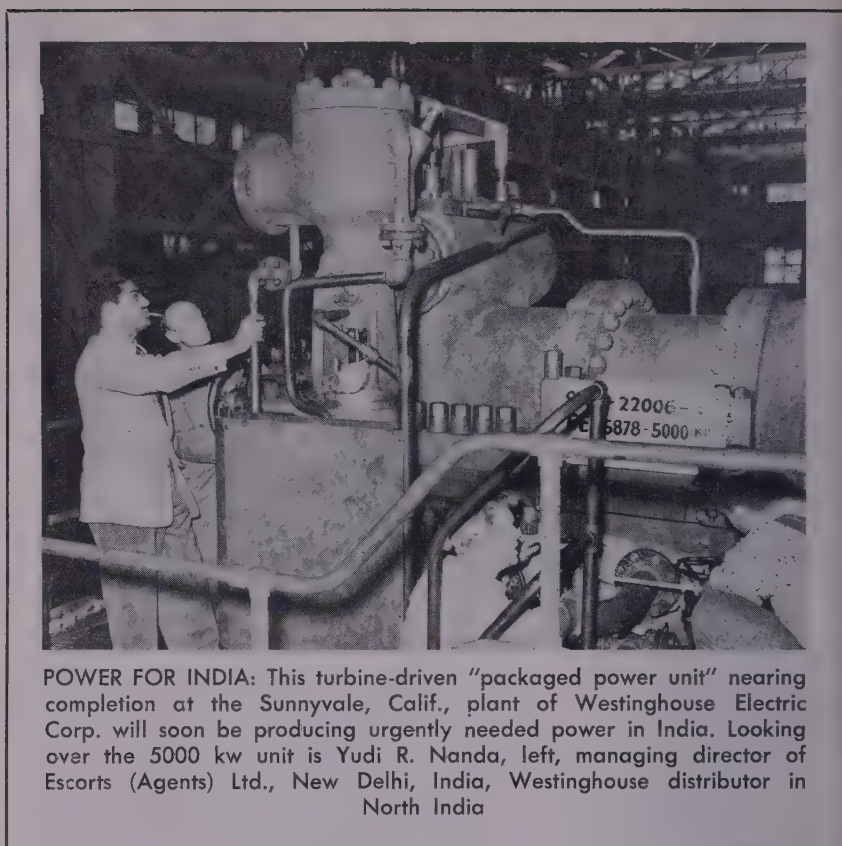
A second 70-ton furnace will be ready for operation in the near future. Two similar furnaces, but of 60-ton capacity each, are also being installed.

Ford, Bethlehem To Expand

ACQUISITION of a 100-acre site in Hamburg, N. Y., near Buffalo, for the future erection of a large plant to produce passenger auto stampings and subassemblies was announced last week by Ford Motor Co. The property is located about 1 mile from the present Buffalo Ford plant.

Simultaneously, Bethlehem Steel Co. announced it would immediately start construction of new facilities to expand capacity for cold-rolled sheet and strip at its neighboring Lackawanna, N. Y., plant in order to supply Ford with additional sheets. Capacity will be doubled from the present 500,000 tons to 1 million tons a year. Part of the facilities are expected to be completed by yearend.

Proximity to steel mills and to



POWER FOR INDIA: This turbine-driven "packaged power unit" nearing completion at the Sunnyvale, Calif., plant of Westinghouse Electric Corp. will soon be producing urgently needed power in India. Looking over the 5000 kw unit is Yudi R. Nanda, left, managing director of Escorts (Agents) Ltd., New Delhi, India, Westinghouse distributor in North India

eastern assembly plants makes the site advantageous to Ford from the standpoint of freight savings under the present f.o.b. mill pricing system.

Gets White House Support

Congress told President favors O'Mahoney delivered pricing bill. Quick passage expected

UNEXPECTED White House support for the O'Mahoney delivered pricing bill was forthcoming last week when the measure came up in the House for debate. Majority Leader McCormack told the House the bill had presidential approval as well as support of the Federal Trade Commission and the Department of Justice.

As a result, it is expected the measure will be enacted quickly into law by the House despite the opposition of Representative Wright Patman of Texas and several other legislators. It was passed by the Senate several weeks ago.

That single factor, congressional protocol, which has had powerful influence on the fate of much legislation in the past, appears to have been a big factor in preventing the O'Mahoney bill from being pigeonholed for the remainder of the present session of Congress.

When the O'Mahoney bill came from the Senate it was referred to

the House Judiciary Committee which, having already devoted considerable study to the need for legislation to clarify the confusion that grew out of the Supreme Court's cement decision, reported the bill out promptly, after token hearings.

Thereupon, Rep. Wright Patman (Dem., Tex.), chairman of the House Small Business Committee, addressed a letter to Chairman Adolph J. Sabath (Dem., Ill.) of the House Rules Committee requesting that no rule be granted the bill until his committee had looked into it. This, of course, was a breach of House custom, for it is unusual for any committee to encroach upon the province of another. Nevertheless, chances were considered better than even that as a result of Mr. Patman's maneuver the O'Mahoney bill would not come to vote in the House at this session.

Surprise—It was a surprise, therefore, when the Rules Committee, on June 30, granted the bill an open rule, with three hours of general debate, thus insuring the early House action that was contemplated at the start.

Anticipating favorable House action on the O'Mahoney bill respondents in the Rigid Steel Conduit Case have asked the Federal Trade Commission to reopen its case and modify its order so as to permit members of the industry to meet delivered prices of each other.

Postwar Forecasts Miss

Predicted demand for consumer goods not attained though records are scored in some lines

EVEN the lowest of several widely circulated forecasts of postwar markets for consumers' durable goods has not been attained on an average annual postwar basis, according to the American Iron & Steel Institute. This is particularly true in dwelling units, passenger automobiles and refrigerators.

The year 1948, however, was far above the postwar average in output of most consumer durables. After nearly four years of peace, ownership of homes, automobiles and household appliances is wider than ever before in the United States. The standard of living has been increased substantially. Thus, some of the wartime forecasts of postwar markets have come true but others have been too high.

Production Records—New production records have been made in this postwar period in nearly every class of household appliance, and the best previous records have been closely approached in output of automobiles and construction of dwelling units. Forecasters who came out with fantastically high figures weren't the only ones later shown to be unrealistic. Many experts looked for extensive unemployment and deflation. All the forecasts were thrown off by widespread strikes in 1946 which reduced industrial activity, particularly in steel, by shortages of scrap and difficulties in other raw materials. Gradually, these hindrances were overcome, and larger amounts of steel have been available for all uses than ever before. In the first four months of 1949 shipments of steel products were over 23.2 million net tons, an increase of nearly 2 million tons over the corresponding 1948 period. In all of last year, shipments had set a new high at 65,973,000 tons.

More Working, More Idle

ALTHOUGH total employment reached the year's high mark of 59,619,000 in June, the influx of more than a million students and thousands of temporarily unemployed teachers to the labor market made unemployment the highest since February, 1942. The Census Bureau revealed the nation's unemployment in June reached 3,778,000, almost half a million more than in May.

Of the approximately one million

more employed in June than in May, 722,000 were on farms and about 200,000 in industry. The census report also indicated this year's high school and college graduates are having a harder time finding jobs than June graduates have had in ten years.

Youngstown Employment Drops

YOUNGSTOWN employment has dropped to the lowest mark since before the war, except for tie-ups from past strikes, Ohio State Employment Service announces. Unemployment compensation claims, highest in years, jumped to 3500 for the week ended June 25. Nearly 5000 persons are registered for the less than 400 jobs of all descriptions registered with the service.

Lukens Furloughs 150 More

FURLOUGHING of an additional 150 employees—most of them from Lukenweld Division—has been announced by Lukens Steel Co., because of decreased demand for steel plate and steel plate specialties. The 120-inch four-high mill, shut down for overhauling since June 19, was placed back in operation.

July Suspension for Twin Coach

TWIN Coach Co. and its Fageol Engine Division, Kent, O., will be closed down during July. Suspension of operations will permit employees to take vacations in this period, and operations will be resumed on a reduced basis in August, the company announced. Purchase of busses has been declining for the last 18 months.

Harvester Sales on Decline

INTERNATIONAL Harvester Co. sales for the first time in 33 months are running below the corresponding period of the preceding year. Overall sales reached a turning point in April and are believed to have continued under the year-ago level in May and June. The present decline will probably drop sales for the fiscal year ending Oct. 31 to between \$850 million and \$900 million. Sales in last fiscal year were \$945 million.

U.S. Exports Decline, Imports Up

EXPORTS from the United States, reflecting important declines in three commodities, dropped to \$1,077,200,000 in May from the April level of \$1,148,300,000, Commerce Department announced. Machinery and vehicles dropped from \$340,300,000 to \$283,-

100,000; textile fibers and manufactures, from \$167,200,000 to \$138,600,000; and chemicals and related products, from \$74 million to \$63,600,000. At the same time imports in May rose to \$539,400,000 from the April figure of \$534,000,000. Exports of nonmetallic minerals increased from \$113,400,000 in April to \$122,800,000 in May.

Easier Credit Won't Curb Slump

MARRINER S. ECCLES, member and former chairman of the Federal Reserve Board, says the board's move to ease credit won't stop the business recession.

The Federal Open Market Committee has decided to temper the sale of government securities by the Federal Reserve System and thus allow prices to rise. Although favoring the step, Mr. Eccles believes that the easing of credit will do little good.

"Since we have had easy money conditions with relatively low rates all along in the money market, it should not be supposed that still easier conditions with lower rates will correct or cure a deflationary trend," he points out.

Kalamazoo Makes Price Cuts

KALAMAZOO Stove & Furnace Co. announced an immediate cut of 30 per cent and more in prices on gas, electric and combination ranges. Low-priced gas range came down from \$139.50 to \$99.50.

Perfection Buys Gas Range Lines

PERFECTION Stove Co., Cleveland, has acquired the patents and trade names of the Acorn and Oriole range lines, formerly manufactured by Standard Gas Equipment Corp., Baltimore, along with certain other physical assets of the Maryland company.

Tools, dies, jigs and molds acquired in the deal will be shipped to Cleveland, and manufacture of the Oriole and Acorn gas ranges will begin this month at the firm's newly expanded Ivanhoe road plant. A few months ago Perfection entered the gas range field with three models which are being continued. The firm now will market over 20 gas cooking units.

In addition to manufacturing gas and oil cooking appliances, Perfection makes gas and oil furnaces, oil space heaters and water heaters and related products. Within the next three months, electric ranges will also be added to the company's line of equipment.

Automotive Stampers Doing Well

Other pressed metal shops on contract work report business volume off. Steel supply problem of industry fades with mill deliveries markedly improved

STEEL stampers are feeling the present business recession but the worst hit are those without diversified lines, or those whose automotive customers make up a small proportion of their business. The pressed metal shops are adjusting sales and manufacturing policies to the slower tempo of overall business.

Doing a large share of their business with the automotive industry, firms concentrating on automotive work have been doing well but such shops expect to experience a drop in volume should the automakers cut output, says Pressed Metal Institute.

Steel Plentiful—Spot survey by STEEL in the Cleveland area, a representative stamping center, reveals some price easing on pressed metal work. Diminishing stocks of premium priced steel, availability of steel stocks hitherto procurable in small quantities only, and purchase of mill steel rather than warehouse stocks are enabling some pressed metal shops to pass along cost savings.

One firm whose business is almost entirely with truck and auto builders reports operations at 100 per cent of capacity. Another whose automotive customers make up a small proportion of its business reports a 75 per cent cut in volume.

No Pessimism—Although few in

the industry are predicting when business will get better, pessimism about the future is practically nil. This is natural in an industry which has experienced a 257 per cent increase in the value of shipped products from 1939 to 1947. A good deal of this increase is due to new demands; some, of course, is attributable to higher prices accompanying the general economic inflation. Some interests whose business is slow predict better business in the fall. At present, however, many pressed metal users are buying in small lots only.

Sum of direct payrolls for 40 companies reporting to the Pressed Metal Institute was down 8 per cent in the first quarter of this year compared with the last quarter of 1948.

Cutbacks Vary—Cutbacks in production have ranged from 10 per cent for companies with large automotive contracts or with diversified lines, to 75 per cent for many who have done the bulk of their business with home appliance manufacturers. Two Cleveland area firms eliminated their second shifts entirely. Several shops that had laid off workers, however, have hired them back because of a pickup in business; a number of others have maintained production schedules by increasing efficiency.

With one notable exception—a com-

pany which increased its steel inventory 50 per cent since January—pressed metal firms have lowered their steel inventories from 15 to 45 per cent since the first of the year. Most companies report availability of all kinds of steel, although a few said some "shopping around" is necessary occasionally, particularly for cold-rolled material.

Under pressure of competition to keep prices down, pressed metal shops which formerly accepted cold-rolled sheets when hot-rolled was not immediately available no longer are compelled to take the former. This situation is in sharp contrast to that immediately after the war when pressed metal companies accepted any type steel available because of the industry's inability to obtain steel in quantities desired to meet expanded demand for pressed metal parts, etc.

Mill Deliveries Improve—Deliveries of steel to the industry from mills range from two weeks to three months, for the most part, but one company reported delivery of 50 tons of steel within 24 hours.

Improvement in marketing methods has come in the forms of increased sales forces, more advertising, more direct mail and a tendency to "dig out" business.

Biggest accent, however, is on methods of manufacture since about 80 per cent of pressing and stamping is done on a contract basis. Few companies are making new dies, purchasing new equipment, but several are simplifying operations or combining two or more operations into one. One large automotive stamper is working on a six months' backlog of new dies for its own operations.

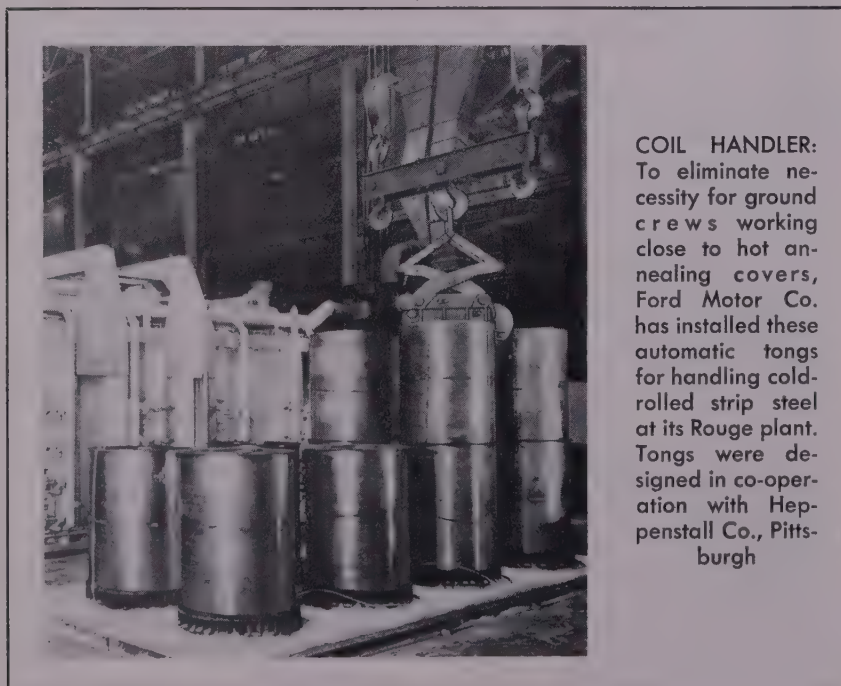
Foreign Markets — Developing of foreign markets and new products were reported by two companies, one with a new agricultural sprayer which received a big response from foreign and domestic selling agents. The other company reported development of a product not yet patented.

Problems confronting the pressed metal industry in a changing market will be the theme of the annual convention of the Pressed Metal Institute at Hotel Cleveland, July 20-22.

PMI Makes Plans for Future

NEW president of the Pressed Metal Institute is Walter A. Gorrell, recently retired as president of the E. J. McAleer Co., Philadelphia. Assuming direction of policy of the institute in its important preconvention activity, Mr. Gorrell had been chairman of the Philadelphia district of PMI.

At the quarterly meeting of the



COIL HANDLER: To eliminate necessity for ground crews working close to hot annealing covers, Ford Motor Co. has installed these automatic tongs for handling cold-rolled strip steel at its Rouge plant. Tongs were designed in co-operation with Heppenstall Co., Pittsburgh

board of trustees in Port Huron, Mich., plans were made for the annual convention; members of standing committees for the coming year were selected; programs for the committees were outlined; and proposed revisions to the institute's constitution were drafted.

Machine Tool Inquiry Gains

Buyer interest rises some, tool builders report. Small firms' purchases lag

INQUIRIES for new machine tools continue to mount, reflecting growing interest on the part of manufacturers in broader markets and improved competitive position.

This condition is reported by L. D. McDonald, president, National Machine Tool Builders' Association, Cleveland, following seven regional conferences with association members.

Reports from all leading machine tool building centers were uniform in that they reported their engineering departments had their "hands full" completing application studies in response to sales inquiries, Mr. McDonald said.

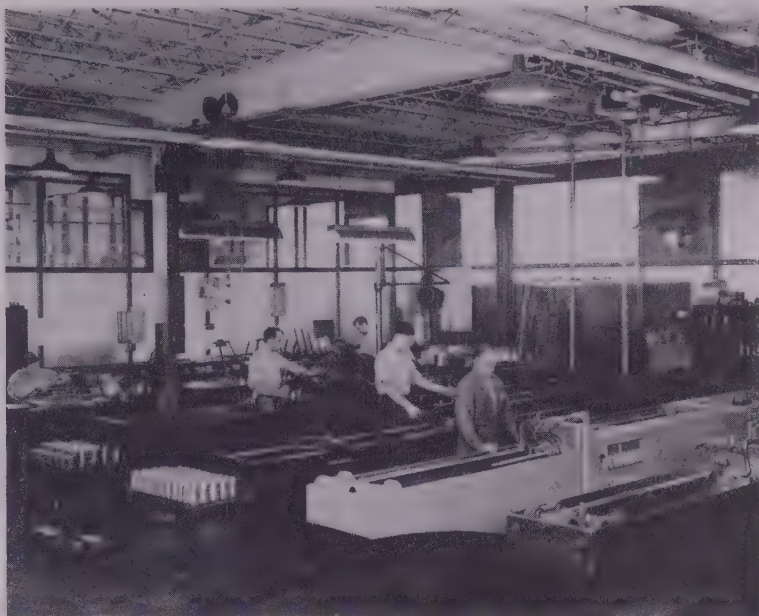
"Manufacturers, during this inventory-paring period, have turned a critical eye on both products and processes in an attempt to streamline costs and assure sales volume," he noted.

Buying Awaited—Whether these inquiries, as cited by Mr. McDonald, will result in orders and give the machine tool industry a needed shot-in-the-arm is anybody's guess. The concerns occasionally come through with a fairly sizable order and bring a new surge of optimism to machine tool builders and dealers alike. Equally important to the industry's well being, however, but not doing much buying at present, are the small shops.

Reported in Cleveland last week was purchase of machine tools costing almost \$100,000 for General Motors' Chevrolet Division plant in nearby Parma, O. The equipment is to be used in making the new Chevrolet automatic transmissions. Another sizable expenditure for three special purpose machines by Thompson Products Inc., Cleveland, was also consummated during the week.

Tool Sales Courses Offered

FIRST in the series of four special summer conferences in sales engineering designed particularly for the machine tool industry will be held at



JOB-LOT BROACHING: Colonial Broach Co., Detroit, has established a production broaching division to do job-lot work for manufacturers who do not have adequate broaching facilities in their own shops. Shown are several horizontal machines in the department. Department is also equipped with vertical press type machines, equipped to do either surface or internal work

Cornell University, Ithaca, N. Y., July 11-16. Jointly sponsored by the National Machine Tool Builders' Association and the American Machine Tool Distributors' Association, this summer's program is the outgrowth of an experimental course held at Cornell last year.

Subject matter will range from fundamentals of machine tool selling through market research and product survey with special attention to tooling-up, work simplification, machine layout, materials handling and engineering economy. The courses will also cover engineering types of analysis involved in the selection of machine tool equipment.

Second course in this series will be presented at Western Reserve University, Cleveland, July 25-30. Dartmouth College, Hanover, N. H., will be the scene of the next course, Aug. 8-13, and the final session will be held at Purdue University, Lafayette, Ind., Aug. 15-20.

Wider Price Classes in Homes

GUNNISON Homes Inc., subsidiary of U. S. Steel Corp. will expand research and product development activities with a view toward providing an additional series of homes to sell in a wider range of price classes than now exist. Foster Gunnison,

newly-elected chairman of the board of directors will head the program. President and general manager of the company now is Gen. John J. O'Brien, who was in charge of all Army real estate during the war.

Negative Acting Spring Made

DEVELOPMENT of an elastic member which resists less the more it is deformed has been announced by Hunter Spring Co., Lansdale, Pa. The device which is called a Negator is made by prestressing each increment of a length of spring stock by a predetermined (but not necessarily constant) amount.

In use the device is progressively unwound (drawn out like a tape rule) over its range of action. Its resisting force is developed as each successive length of the metal strip is drawn off the coil and is straightened thereby. The force required to perform this work varies inversely as the radius to which the metal strip has been prestressed at that point. The smaller the radius the greater the force required. If the strip is heavily prestressed near the free end and only lightly prestressed further along the coil, it will pull back more at the beginning of its range of action than at the end of its range, thereby exhibiting a negative force deflection characteristic.

Guarantee that Point Four Program would give American investors abroad to be opposed on ground that government would be put into partnership with private business

ONE FEATURE of President Truman's message on his Point Four program (to help backward and underdeveloped areas of the world) is widely regarded as thoroughly unsound and is sure to meet with much opposition when Congress gets into the matter. Under this proposal, the Export-Import Bank would guarantee American foreign investors against "the risks peculiar to those investments."

Characterizing the guarantee program as experimental at the outset, the message read:

"We believe that investors will send their capital abroad on an increasing scale only if they are given assurance against risk of loss through expropriation without compensation, unfair or discriminatory treatment, destruction through war or rebellion or the inability to convert their earnings into dollars . . . To wait until stable conditions are assured before encouraging the outflow of capital . . . would defer the attainment of our objectives indefinitely.

"If the demand for guarantees should prove large, and lending activities on the scale expected, it will be necessary to request the Congress at a later date to increase the authorized funds of the bank."

Partnership Opposed—This portion of the message came as a surprise in view of recent State Department findings. When government investigators a few months ago queried representative business interests they learned that business wants no such guarantees. Business spokesmen told the government investigators that such an arrangement would put the government into virtual partnership with private business, with power to audit books and otherwise interfere with their business—and they did not want that. If protection is needed against abnormal risks, they felt, it should be provided by some form of mutual insurance setup. In general, they said, they are willing to stand or fall on the basis of their business judgment.

All they wanted from the government was to create the framework within which they could do business abroad—activities such as setting up broad economic programs in the co-operating foreign countries, the negotiation of treaties guaranteeing

against expropriation without compensation and the maintenance of stable exchange rates.

Whether there is more here than meets the eye—whether the objective frankly is a large degree of government control over private investments abroad and over privately conducted foreign trade—should become more apparent after the appropriate committees open hearings on the Point Four program.

Promotes Foreign Investment

OF WIDE interest to American business is the International Bank Securities Marketing Act signed by President Truman June 29. It is an important part of the overall move to attract more private American capital into foreign investments. It will do this by authorizing banks to underwrite and deal in securities of, or guaranteed by, the International Bank for Reconstruction and Devel-

opment; hitherto the banks have been restricted to buying such securities, for their own investment portfolios, in amounts up to 10 per cent of their capital and surplus. Backed by the Treasury guarantee fund of \$2.5 billion to reimburse the International bank for bad loans, the securities should have a very large market.

While the authorized capital of the International bank is approximately \$8 billion, the participating countries have paid in only \$733 million (the United States paid in \$650 million) in gold and dollars and \$931 million in foreign currencies. Since the bank already has loaned \$650 million the time is drawing near when more capital will be needed—and the decision of administration officials and Congress was that this should be obtained from private American sources.

With increasing stability in Europe and the rest of the world, more "sound" loan applications are being received. Many of these, STEEL is informed by a qualified spokesman call for equipment that would have to be purchased from manufacturers in the United States.

As an example, now under consideration is a large loan to India which would result in heavy purchases of railroad rolling stock in the United States. The bank is about to undertake a comprehensive survey of Colombia—a mission headed by Lauchlin Currie will report on what should be done to improve Colombia's agriculture, industry, electric power generation, transportation and health. Missions have been sent on similar errands to other countries so that a head start is being made on what is expected to be a large overall world program.

Fight Over Taft Is Brewing

NO EVENT since the elections of last November has had such profound significance for capital politics as the performance of Sen. Robert A. Taft (Rep., O.) in single-handedly persuading a Democratic Senate, in the face of the Democratic campaign pledge to repeal the Taft-Hartley act and restore the original Wagner act, to pass a labor bill that retains all the labor-hated provisions of the Taft-Hartley act.

"Taft must go!" is the verdict of labor, and battle lines are being drawn for a knockdown campaign spearheaded by the American Federation of Labor and actively backed



NEW SECRETARY: Gordon Gray, who was an Army private seven years ago, is the new secretary of the Army. The 40-year-old Secretary Gray, publisher of a Winston-Salem, N. C., newspaper, had been acting secretary of the Army since resignation of Kenneth C. Royall in April. NEA photo

Storm Sash on Mass Production with AMERICAN MONORAIL

● A well-known manufacturer of steel office furniture has successfully undertaken mass production of screen and storm sash. A continuously operated finishing department, with a capacity of 80 storm sash and component parts per hour, is made possible by a 300 foot manually operated American MonoRail Overhead Handling System. Of a staff of 60 personnel, only 5 are required in the finishing department. The American MonoRail system transports all the pieces from cleaning and priming tanks to paint dipping vats to ovens to storage. Manual operation was chosen because of the diversity in size and shape of the pieces being finished.

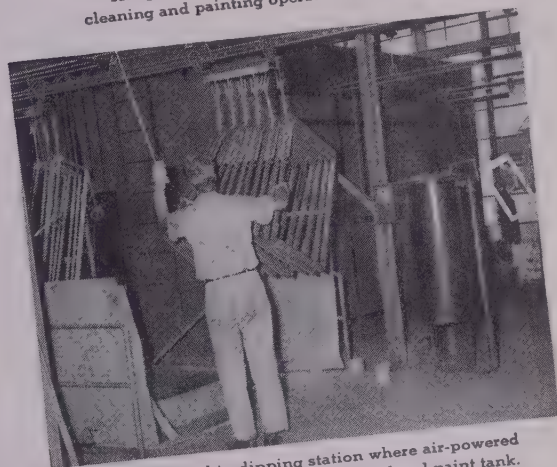
From the simplest hand-operated unit to the most complicated fully automatic system. American MonoRail engineers can suggest a system best suited to **YOUR** problems.



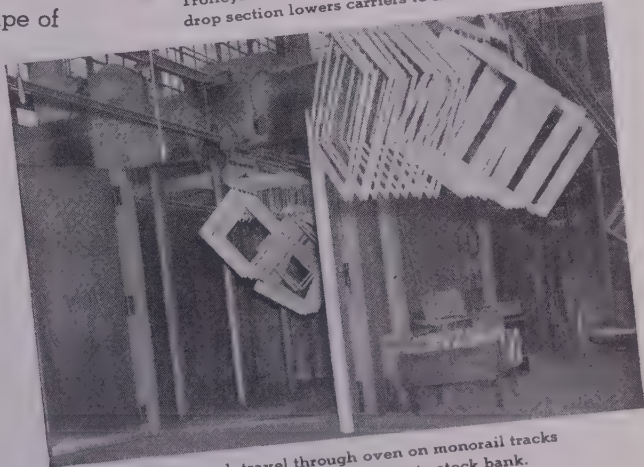
SEND FOR BULLETIN C-1,
a 56-page book showing
successful applications of
American MonoRail Systems.



"Hang-on" station with upper level track over the cleaning and painting operations shown in background.



Trolleys travel to dipping station where air-powered drop section lowers carriers to floor-level paint tank.



Finished sash travel through oven on monorail tracks which extend through rear door to stock bank.

THE AMERICAN MONORAIL COMPANY

13102 ATHENS AVENUE

CLEVELAND 7, OHIO

by the administration, to defeat him when he runs for re-election in 1950.

That is where the significance of his labor bill victory comes in. Informed observers see these effects from a Taft re-election defeat: 1. Easily the most influential Republican leader would be removed from the Senate; 2. his defeat would mark the end of many Republican principles as they have been understood in the past, and might bring an end to the party; 3. the defeat of Taft would put more power than ever in the hands of labor leaders and make this an out-and-out labor government.

So it goes without saying that the efforts to defeat Taft will be matched only by those aimed at keeping him in office. Ohio, ever a political hot-bed, will see a new high in political activity next year, and the eyes of the nation will be on her.

To Continue Ship Operation

THE ACT to extend for another year, to June 30, 1950, the Maritime Commission's authority to sell, charter and operate ships has been signed by the President.

St. Lawrence Project Up

SEN. TOM CONNALLY (Dem., Tex.), chairman of the Senate Foreign Relations Committee, plans to appoint a subcommittee to hold fur-

ther hearings on the St. Lawrence seaway project in order to "bring the record up-to-date." Plan calls for submission of a report before the present session adjourns, but Sen. Scott W. Lucas (Dem., Ill.), majority leader, says it is unlikely time will be available for Senate action at this session.

Too Many Cooks

DEPLORABLE effects of scattering federal responsibilities in overlapping and duplicating agencies was aptly illustrated when Secretary of Interior J. A. Krug appeared before the House Public Works Committee to advocate legislation to create a Columbia Valley Administration. Now at least a score of federal agencies have a hand in directing resource development activities in the region—and they get in the way of others.

"It once took two days to get clearance from all the parties concerned so that enough water could be released to float a wheat barge off the rocks. This spring numerous letters, telephone calls and meetings over a period of weeks failed to produce a decision on the release of water from Grand Coulee in face of the threatened recurrence of last year's flood.

"You can't run a river this way," said Mr. Krug. "If this can happen with only two dams operating, one can easily foresee the chaos which

will result when there are a dozen or more dams on the river, unless we have a single watermaster who can control the flow for navigation, irrigation, flood control and power production."

The cases mentioned by Mr. Krug are merely by way of illustration; there are many others that delay or prevent wise action.

The CVA bill would create one organization to handle Columbia Valley affairs now in the hands of the Army Corps of Engineers, the Bureau of Reclamation, the Bonneville Power Administration, the Weather Bureau, the Geological Survey, the Bureau of Land Management, the Soil Conservation Service, the Forest Service, the Fish and Wildlife Service, the Public Health Service, the National Park Service, the Federal Power Commission, the Bureau of Indian Affairs and, in lesser degree, several others.

Economic Reports Available

NOW that the President has signed the act authorizing permanent monthly publication of "Economic Indicators," the Superintendent of Documents, Government Printing Office, Washington 25, D. C., again is accepting subscriptions at \$1.75 per year for domestic delivery and \$2.25 for foreign delivery. Initiated by the Joint Committee on the Economic Report, 80th Congress, and given over to the display of charts and tables which present a precise and concise picture of current economic trends, the publication has won status as the official government publication of its kind.

Government Appointments

COL. LEWIS F. KOSCH has been appointed deputy director of the Selective Service System by Maj. Gen. Lewis B. Hershey, director. Col. Kosch was a top officer in the Selective Service System during World War II.

Dr. Louis C. McCabe, former coal branch chief of the Bureau of Mines, has rejoined the bureau as chief of air and stream pollution research. For the past two years he has been director of the Los Angeles Air Pollution Control District.

Charles H. Kendall is the new general counsel of the National Security Resources Board. He has been a member of the board's staff for more than a year, prior to which he served as general counsel of the Office of the Foreign Liquidation Commissioner in the Department of State.



DON'T SEE ADJOURNMENT: Adjournment date of the first session of the 81st Congress is still indefinite, according to these Democratic leaders (left to right): Sen. Scott W. Lucas (Ill.), Senate majority leader; Speaker of the House Sam Rayburn (Tex.); and Rep. John W. McCormack (Mass.), House majority leader. NEA photo

Europe's See-Saw Economy

**Still unbalanced, ECA reports.
Marketing problems now replace those of production**

WHILE industrial production in Western Europe is flowing at an increasing rate, Marshall Plan countries face complex problems of economic balance, Economic Cooperation Administration reveals in a report on the recovery program.

"Overall trade volume is being sustained at high levels, industrial production continues to expand, and the threat of inflation seems to have eased," ECA says. "At the same time, however, weaknesses in the pattern of economic development are coming to the fore."

Intra-ERP Trade Lags—Trade volume among the participating countries continues to lag, and there are signs of difficulties in sustaining domestic demand and in absorbing the labor force freed by increasing productivity. Problems of markets, trade, prices and distribution are taking the place of those of production, allocation and rationing.

On the bright side, ECA reports the following:

Industrial output during the first 1949 quarter was 113 per cent of prewar. This was 14 per cent above the corresponding quarter a year ago. A further increase in overall output is indicated for the second quarter. Steel output, continuing to set the pace in production expansion, rose above the prewar average for the first time in the opening quarter of 1949. April and May preliminary figures reflect no slackening. Coking coal and steel scrap are becoming more abundant. Coal output, although still below prewar, increased 10 per cent in the first 1949 quarter over a year ago.

Construction activities continue to expand. Cement output was 16 per cent above the same period of last year and brick output was also up.

Prices Stable — Prices have been stable or have declined slightly in all countries except Turkey. Budgets are on the way to balance. Revenue from taxation is more than sufficient to cover the regular expenditures of governments in all countries except Greece and Austria.

On the other hand, the ECA report shows the following weaknesses in recent trends:

Preliminary data indicate that first quarter exports to the Western Hemisphere were somewhat smaller than in the preceding period. Exports to the U. S. declined to \$65 million in



ARGENTINA BOUND: Being loaded at New York for shipment to Buenos Aires, Argentina, is a 75-ton Whitcomb diesel locomotive produced by Whitcomb Locomotive Co., Rochelle, Ill., subsidiary of Baldwin Locomotive Works, Eddystone, Pa.

April from an average of \$83 million per month in the first quarter and \$91 million in the last 1948 quarter.

Intra-ERP trade has lagged behind the postwar expansion of total trade. Excluding Western Germany's depressed trade, the total export volume in the first quarter was 119 per cent of prewar, while exports among participating countries were only 105 per cent of prewar. Designed to ease this situation is a new plan advanced by the Organization for European Economic Cooperation. Subject to Washington approval, the program calls for allotting more dollars than needed to Belgium to cover its deficits with the Western Hemisphere. A log jam in the trade between this nation and the rest of Europe has developed because of currency shortages. An excess of dollars would permit Belgium to give credits to other European countries, particularly Britain, and stimulate trade.

Electric power supply in the first quarter showed a smaller increase than in the previous quarter, the decline reflecting the shortage of thermal generating equipment and the severe drought which reduced the hydroelectric power supply of France, Italy and Austria.

The labor situation during the first quarter was featured by a small general increase in unemployment and a continued increase in output per worker. Unemployment in Bizonia rose to 1.2 million in March, from 750,000 in December. Belgian unem-

ployment, though still serious, declined from 300,000 at the first of the year to 230,000 at the first of April. Unemployment in Italy was almost 2 million in the first quarter, and the problem may be further aggravated.

Steel Cartel — Shifting economic conditions are bringing more talk about a steel cartel. A gentleman's agreement between Belgian and Luxemburgian steelmakers on export prices could be the nucleus for such a cartel. The French are interested and advocate including Western German industry. The British have also been approached, but their participation is doubtful because of the pending steel nationalization.

United Kingdom

THE IRON and steel bill is now in the report stage in the House of Lords. The Conservatives in the upper chamber have succeeded in passing two amendments, one to change the vesting date from May 1 to Oct. 1, 1950, to permit a national vote on the issue, the other to establish a steel prices board to determine fair quotations. Both amendments will probably be tabled by the House of Commons.

Price controls have been removed from steel castings, cast iron drums and certain classes of tubes. There has also been a price reduction for galvanized sheets, terne plates and galvanized wire nails.

ECA has allocated \$2,730,000 to Great Britain for purchase of ma-

chinery for the expansion of Stewart & Lloyds' Corby works. The American equipment will include an electric weld tube making plant and apparatus for iron ore extraction. A further allocation is expected for modernization of the Corby strip mill to increase output by 170,000 tons per year.

Steel Exports Up in April

APRIL iron and steel exports topped the March total by more than 73,000 tons and reached 479,366 net tons. Increased shipments were reported by the Commerce Department in all categories except wire products. The largest gain, tonnagewise, was in the sheet and plate classification which rose from 161,490 tons in March to 187,792 tons in April.

Pig iron and ferroalloy exports in May were at 11,198 net tons compared with 8020 tons in April. Scrap exports of 36,961 tons in May more than doubled shipments of 17,866 tons in the preceding month.

Overseas shipments, in principle categories, were as follows:

(Net Tons)		
	March	April
Semifinished	33,991	47,562
Iron and steel bars.....	42,943	46,169
Sheet and plates.....	161,490	187,792
Structural shapes	38,627	45,021
Railroad supplies	24,127	35,415
Tubes, pipe, fittings.....	69,480	86,071
Wire products	29,014	24,387
Nails, other fasteners.....	6,421	6,949
Total	406,093	479,366
Pig iron, ferroalloys.....	8,020	11,198
Scrap	17,866	36,961

Iron and steel imports, on the other

hand, dropped to 31,539 net tons in April from 44,453 tons in March. Similarly, declines were recorded in pig iron and scrap receipts from foreign sources.

Breakdown as reported by the Commerce Department follows:

(Net Tons)		
	March	April
Ingot, etc.	4,993	2,574
Wire rods	636	539
Iron bars, slabs.....	.....	46
Reinforcing bars	66	1,671
Hollow bar, drill steel....	2	6
Other bars	5,710	3,196
Boiler, other plate.....	4,999	4,558
Sheets, etc.	128	3,590
Tin plate, etc.	3	24
Other hoops, bands.....	2,494	619
Structurals, piling	23,055	13,032
Rails, fastenings	335	75
Wheels, axles	18	46
Pipe, tubes	1,141	943
Round wire	1	1
Flat wire, strip.....	140	200
Telegraph wire.....	50	.....
Wire rope	87	24
Nails, etc.	418	381
Bolts, nuts	9	6
Castings, forgings	12	8
Die blocks, blanks.....	156	.....
Total	44,453	31,539
Pig iron	9,653	2,488
Sponge iron	181	253
Ferromanganese	8,122	8,470
Ferrosilicon	87	44
Ferrochrome	195	805
Scrap	233,225	118,839

Supplemental Sheet Quota

SUPPLEMENTAL third-quarter export quota of 7500 tons of galvanized iron and steel sheets, 18-gage and heavier, has been established by Office of International Trade, Department of Commerce.

Added to the quota of 15,000 tons previously announced, the supplemental tonnage brings the total third-quarter quota for galvanized sheets to 22,500.

U. S. Steel Supply Study

Corporation's subsidiary conducting nationwide investigation of warehouse steel market

ONE of the most ambitious studies ever made of the warehouse steel market is being conducted by United States Steel Supply Co., Chicago, U. S. Steel Corp. subsidiary. When finished the canvass will include responses of every known consumer of steel and other metals and equipment from warehouses.

From trial beginnings more than a year ago, the study has grown into a coast-to-coast undertaking aimed at helping the company know what the needs of warehouse customers will be on an annual basis over the next ten years. In several localities the questioners are already on their second round of calls so that the study can be constantly brought up to date on buying expectations.

Users Co-operate—Degree of co-operation received from contacted metal-using plants has been high. Using its own salesmen to make personal calls, the company considers these men have the most intimate knowledge of trade conditions and are personally interested in obtaining answers which show as accurately as possible probable future needs of the warehouse steel consumer. They have been specially trained for the work by the company's Commercial Research Division and their findings go through each district manager for approval before being sent to the research staff for final editing, coding and compiling.

The information sought boils down to a product-by-product listing of each company's projected needs. With these data, U. S. Steel Supply will calculate the warehouse-supplied total requirements by products of whole industries by geographical areas. Every conceivable breakdown, from the amount of hot-rolled strip annually required by blacksmith shops in a particular county on up, will be possible.

Data Summarized—Data, as compiled, are summarized in a series of colored maps and charts to provide quick reference to the steel needs of a given area. Analysis of the data gives a means for revealing where strength and weakness in the present distribution system lie. With these tools at hand, the company believes it will be better able to stock products in proper size ranges which the trade believes it will need and at the same time gear its physical facilities to these requirements on a district basis. Possible further use of the



CATERPILLAR ON RAILS: Treads of this tractor produced by Caterpillar Tractor Co., Peoria, Ill., and owned by Erie Railroad are cut away in the center so the tractor can operate on rails when necessary. By riding the tracks the tractor equipped with a hoist can lay rail ahead of itself

statistics may be for determining salesmen's potentials or re-distributing sales territories when inequities exist.

Belt Conveyor Fight Continues

FIGHT to build the Lake Erie-Ohio river belt conveyor will go on, V. H. Johnson, assistant to the president of Akron, Canton & Youngstown Railroad, sponsor of the project, has announced.

The program was defeated in the Ohio legislature last spring when a bill was voted down to give rights of eminent domain to the line so it could acquire a right-of-way. Engineering work is being continued, with completion planned for Jan. 1, 1951. Another effort to gain legislative approval will be made in the 1951 session.

Pennsy Completing Expansion

MORE than 300 new passenger cars, 140 new diesel-electric passenger and freight locomotives, 4000 new freight cars and 426 new diesel switching locomotives—a major portion of Pennsylvania Railroad's \$266 million postwar improvement program—are now in service.

In addition 92 passenger cars, of 382 programmed, have been modernized, as have 10,400 freight cars.

Diesel Locomotives Ordered

CONTINUATION of the large-scale equipment modernization programs launched by leading western railroads is believed to be indicated in Southern Pacific Railroad's order for 67 new diesel locomotives costing more than \$23 million.

This order will raise to approximately \$241 million the company's postwar expenditures for new rolling stock, of which nearly \$90 million is for 263 diesel locomotives.

Scrap Stocks Decline

CONSUMERS' stocks of purchased scrap decreased to 3,764,000 tons at the end of April but pig iron stocks increased to 1,362,000 tons, according to the Bureau of Mines. This was the third consecutive month in which scrap stocks decreased and the fifth consecutive month in which pig iron stocks increased. Purchased scrap consumption decreased 400,000 tons from March, totaling 2,233,000 tons in April; home scrap aggregate was 2,430,000 tons, a decrease of 227,000 tons, and pig iron declined 326,000 tons to 4,827,000 tons.

Steelmaking furnaces used 3,517,000 tons of scrap in April, compared

with 3,953,000 tons in March. Pig iron consumption also decreased to 4,234,000 tons from 4,456,000 tons in the preceding month. The total April melt of 7,751,000 tons in steelmaking furnaces was 658,000 tons below March and consisted of 45 per cent scrap and 55 per cent pig iron.

New Federal Agency Formed

NEW federal agency, the General Service Administration, has started operations. It brings together the property and supply, building construction and management, records management and certain public works functions of the government.

Headed by Jess Larson, former Federal Works administrator and War Assets administrator, GSA consolidates all functions of Federal Works Agency, including Public Buildings Administration, Bureau of Community Supply, the Office of Contract Settlement, National Archives Establishment and War Assets Administration. Name of Public Roads Administration is changed to Bureau of Public Roads.

New Handling Group Elects

AMERICAN Material Handling Society Inc., newly formed as a technical group composed of engineers and other personnel with material handling problems, has organized on a permanent basis and elected officers at a meeting in the Hotel Carter, Cleveland.

President is Allen K. Strong, Columbian Rope Co., Auburn, N. Y.; vice president, Herbert H. Hall, Aluminum Co. of America, Pittsburgh; treasurer, William Van Allen Clark, professor, Massachusetts Institute of Technology, Cambridge, Mass.; secretary, Irving M. Footlik, Galter Products Co., Chicago.

Instrument Men Meet in St. Louis

INSTRUMENT Society of America will hold its 1949 conference and exhibit at the St. Louis Auditorium on Sept. 12-16.

The society will have sessions on instrumentation for production processes; inspection and gaging; maintenance and operation of instruments; instruments in transportation, testing and chemical analysis. National Telemetering Forum will have sessions on guided missile instrumentation. American Institute of Physics will have conferences on scientific instruments. American Society of Mechanical Engineers, Industrial Instruments & Regulators Division, and American Institute of Electrical Engineers, Instruments &

Measurements Committee, will also participate.

The instrument exhibits, held in conjunction with the conference, will feature products of 131 exhibitors.

CALENDAR OF MEETINGS

July 11-16, Concrete Reinforcing Steel Institute: 25th anniversary meeting, The Greenbrier, White Sulphur Springs, W. Va. Wire Reinforcement Institute will meet July 11; Steel Joist Institute will meet July 12; American Iron & Steel Institute Committee on Reinforced Concrete Research will meet July 13; Rail Steel Bar Association will meet July 13; Concrete Reinforcing Steel Institute will meet July 14-16. Last group's headquarters are at 38 S. Dearborn St., Chicago.

July 13-15, American Society of Civil Engineers: Summer convention, Mexico City. Society headquarters are at 33 W. 39th St., New York.

July 14-15, Magnesium Association: Quarterly meeting, Hotel General Brock, Niagara Falls, Canada. Association headquarters are at 30 Rockefeller Plaza, New York.

July 15-24, South American Union of Engineering Associations: First Pan-American Congress, Rio de Janeiro, Brazil.

July 20-22, Pressed Metal Institute: Annual convention, Hotel Cleveland, Cleveland. Institute headquarters are at 13210 Shaker Sq., Cleveland.

July 22, Truck-Trailer Manufacturers Association: Midyear general meeting, Edgewater Beach Hotel, Chicago. Association headquarters are at 809 National Press Bldg., Washington.

July 28-29, American Foundrymen's Society: Annual directors' meeting, Chicago.

Aug. 10-12, Western Packaging Exposition: Civic Auditorium, San Francisco.

Sept. 9-12, Instrument Society of America: Clinic on maintenance of industrial instruments, Hotel Statler, St. Louis. Society headquarters are at 921 Ridge Ave., Pittsburgh.

Sept. 12-16, Instrument Society of America: National conference and exhibit, Municipal Auditorium, St. Louis. Society headquarters are at 921 Ridge Ave., Pittsburgh.

Sept. 15-16, Magnesium Association: Quarterly meeting, Hotel Statler, Detroit. Association headquarters are at 30 Rockefeller Plaza, New York.

Sept. 21-24, National Association of Foremen: 26th convention, Hotel Statler and Masonic Temple, Detroit. Association headquarters are at 321 W. First St., Dayton, O.

Sept. 25-Oct. 1, American Institute of Mining & Metallurgical Engineers: Midyear meeting, Neil House, Columbus, O. Details may be obtained from J. H. Melvin, Orlan Hall, Ohio State University, Columbus, O.

Sept. 26-28, National Electronics Conference: 1949 conference and exhibit sponsored by Illinois Institute of Technology, Edgewater Beach Hotel, Chicago. Nathan Cohn, Room 1505, 307 N. Michigan Ave., Chicago, heads the exhibits committee.

Sept. 29, American Iron & Steel Institute: Regional technical meeting, Hotel Statler, Buffalo.

Oct. 3-4, National Association of Corrosion Engineers: South central regional meeting, Adolphus Hotel, Dallas, Tex. Heading the arrangements committee is G. R. Olson, United Gas Pipe Line Co., Shreveport, La.

Oct. 3-6, Association of Iron & Steel Engineers: Annual convention, William Penn Hotel, Pittsburgh. Association headquarters are at 1010 Empire Bldg., Pittsburgh.

Oct. 6, American Iron & Steel Institute: Regional technical meeting, Drake Hotel, Chicago.

another use for

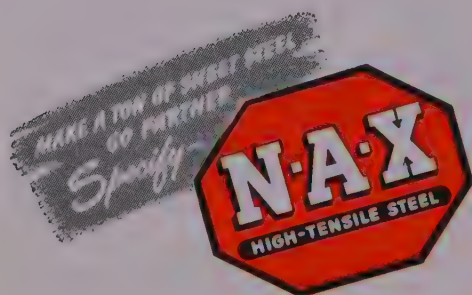
N-A-X

HIGH-TENSILE STEEL



The modern Gar Wood Load & Packer for garbage and rubbish.

The high corrosion-resistance and durability of N-A-X HIGH-TENSILE makes it ideal for use in garbage disposal trucks and similar applications. Another reason why industry is rapidly changing to N-A-X HIGH-TENSILE.



GREAT LAKES STEEL
Corporation

N-A-X Alloy Division • Detroit 18, Michigan
UNIT OF NATIONAL STEEL CORPORATION

Mirrors of Motordom

Argument over whether autos are bought for transportation or swank appearance and style will not down. While academic now, situation may bring future showdown

DETROIT

GIVEN an air-conditioned dining room, the old argument over whether people buy automobiles for pure transportation or swank appearance and style will not down. A considerable section of high-placed opinion around Detroit holds firm to the belief the No. 1 consideration is transportation, all other matters being secondary, including streamlining, automatic transmissions, pushbutton windows and the rest.

They insist that particularly among second, third and later owners of passenger cars, as the vehicles pass down through the used-car channels, nothing more is wanted than dependable transportation, and such buyers even would go so far as to prefer standard types of gearshift transmissions over the several types of automatic and semiautomatic designs now on the market, for the simple reason that the more moving parts built into a mechanical unit, the more chances there are of something wearing out or giving way to the point where major maintenance is involved.

Granted such discussions may be a trifle academic as long as the industry can sell everything it can build, at the same time they may be pointing toward a coming showdown between rugged orthodoxy, of which the Chrysler lines may be considered typical, and the more unconventional and perhaps more style-conscious designs of competitors. The fall months could see the battle lines drawn and the pot-shots flying as the two schools of thought tussle a little more strenuously for the customer's dollars.

The conservative group, in its pre-occupation over engineering detail and constructional excellence, may be forgetting the influence of women in selecting automobile purchases, both new and used. To the female sex it is probably not so important that fender can be unbolted and replaced without too much trouble; they are more attracted to symmetry and line and color. Another strong advantage of the "style-heavy" models is that they are something completely new, unmatched by anything now on the road, while those designs

aimed at the market which is buying transportation only, are not too greatly different in outward appearance from cars built in the period 1940-1949.

"O. K.," say the conservatives, "but as long as we can manufacture to the capacity of our plants, as long as our dealers' stocks continue well below what we consider the normal level

Automobile Production			
Passenger Cars and Trucks—			
U. S. and Canada			
	1949	1948	
January	445,092	422,236	
February	443,734	399,471	
March	543,711	519,154	
April	569,728	462,323	
May	508,101	359,996	
June	628,000*	454,401	
Six mos.	3,138,366*	2,617,581	
July		489,736	
August		478,186	
September		437,181	
October		516,814	
November		495,488	
December		514,337	
12 mos.		5,549,323	
*Preliminary.			
Estimate for week ended:			
		(Same week)	
	1949	1948	
June 18	146,056	109,259	
June 25	153,001	95,027	
July 2	146,188	112,307	
July 9	115,000	98,700	
Estimates by Ward's Automotive Reports			

and as long as we can earn a decent profit and keep employment up to the peak, we're not worrying. When the time comes for us to be concerned, we'll be ready with something new."

Bugas Cites Cold, Hard Facts

DAY-TO-DAY extension of the Ford-UAW labor contract beyond the expiration date of July 15 has been agreed upon, although the union went through the routine formality of a strike vote, with about 6000, or 10 per cent, of the Rouge plant membership participating. The company's

first proposal of an 18-month moratorium on economic demands, after being publicly denounced by union officials as a "flight into fancy," was followed up by another memorandum from John S. Bugas, Ford industrial relations vice president, citing some cold, hard facts on the wage picture. He noted that straight-time hourly rates as of April were higher than those of competitors and stood at \$1.66 per hour, comparing with a figure of 90 cents an hour in the same month ten years ago, an increase of better than 18½ cents per hour to cover "hidden" payroll benefits in the form of payments for vacations and holidays, social security, unemployment compensation, salaries of union committeemen and group insurance. And this is not all, for the inclusion of overtime or shift premium time payments would add another 7½ cents, making a true average labor cost to the company of \$1.92 per hour at current rates. Meanwhile the cost-of-living index has declined the equivalent of 4½ cents an hour in the past year, giving workmen in effect a wage increase of this amount. The average straight-time in Ford plants of \$1.66 compares with national average hourly earnings of \$1.35 per hour in all manufacturing industries.

All this week the UAW-CIO will be holding its annual convention in Milwaukee, so the Ford negotiations likely will mark time until this event has been concluded. Two union-owned radio stations will broadcast principal proceedings of the convention, the first time such coverage has been furnished.

Chrysler Rules Out Pensions

CHRYSLER has told the UAW it does not consider pensions as coming within the scope of wage adjustments, the only portion of its contract which may be reopened at this time. The union will counter with demands for a wage increase of sufficient amount to cover the cost of a pension plan, thereby hoping to circumvent contract limitations. Many high industry officials are of the firm conviction that pension plans, if they are to be instituted, should come under the supervision of agencies already equipped to handle such matters, and not set up under supervision of union-controlled groups. The latter arrangement is held to be un-American in character and placing

(Material in this department is protected by copyright and its use in any form without permission is prohibited)



JANUARY IN JULY: While temperatures soar outside, a Ford Motor Co. engineer supervises a cold-weather starting test on a 1949 car. The wind tunnel in which the tests are conducted simulates conditions of ice and sleet, with an 80-mph gale and a temperature of 30 degrees below zero. NEA photo

too much power in the hands of those controlling the collections and disbursements.

The only company operating its own social security program, Kaiser-Frazer, reports benefits now are being received by plant personnel, both union and nonunion, at a rate of more than \$1 million yearly. Two separate funds, identical in character, are maintained to cover members and nonmembers of the UAW-CIO Local 142, the company contributing 5 cents an hour for each hour worked by the insured employees, this being the full cost of the plans.

Death, disability, maternity, hospital and surgical benefits totaled \$537,000 in the first six months of the program, launched last October as a replacement for the original bonus plan under which the company contributed \$5 per car produced to a fund which was distributed at Christmas time.

About 82 per cent of the employees in four K-F plants are covered by company-union fund, the rest being eligible to come under the company's own plan. Principal difference is in administration of the details, the one being jointly operated by company and union trustees, the other by company men only. The funds underwrite costs of hospitalization and surgical benefits under the Blue Cross system, sickness and disability ben-

efits of \$30 a week for a maximum of 26 weeks, \$2000 life insurance and special maternity benefits at a rate of \$30 weekly for up to six weeks.

In the first half-year of the plan, 3000 employees and their families used free hospitalization services valued at \$225,000, while 70 per cent of those hospitalized underwent surgery valued at \$92,000. In the same period, disability payments totaling \$73,100 were paid to 870 employees, and survivors of 41 employees who died since October received benefits of more than \$100,000.

Packard Deliveries Heavy

PACKARD dealers in the first six months of the year delivered 49,360 automobiles, second only to the peak half-year of 1937 when 65,464 units were delivered. The total was 13.8 per cent above a year ago and 45.9 per cent better than the average of the ten previous peacetime years. Production held close pace with deliveries, being 50,256 for the six months, 9 per cent ahead of last year and 52 per cent ahead of the ten-year average. Twin assembly lines now are operating on a schedule of 80 cars an hour.

The company has undertaken a \$2 million expansion of showrooms and district offices at Chicago, with

building expected to be completed by midwinter. A 3500-sq ft showroom will be fronted by a continuous ribbon window of sill-less glass, 180 ft long and 11½ ft high. Radiant heating, designed to assure frost-free windows, will serve the entire ground floor of the two-story building. Door entrances and the building-length canopy will be trimmed in stainless steel.

GM's June Output a Record

FINAL tally has been made by General Motors on its June production total and, as expected, it was the highest monthly output ever recorded, hitting 275,703, United States and Canada. This topped the May total by 10,423 units. Passenger cars accounted for a little over 83 per cent of the month's schedules, and of these Chevrolet alone furnished 51 per cent.

Keating Takes on Tough Job

ONE of the toughest and busiest jobs in the corporation, that of general manager of the Chevrolet Division, has been assigned to Thomas H. Keating, general sales manager since October, 1945, and succeeding W. F. Armstrong, granted a leave of absence because of illness. When he is able to return to duty, he will be given special assignments on the staff of C. E. Wilson, president. Keating joined Chevrolet 33 years ago and held every major position up through the division's field organization prior to becoming assistant general sales manager in March, 1937. He is one of the few sales managers ever to accede to the general manager of a GM unit. Hugh Dean continues in his post as manufacturing manager.

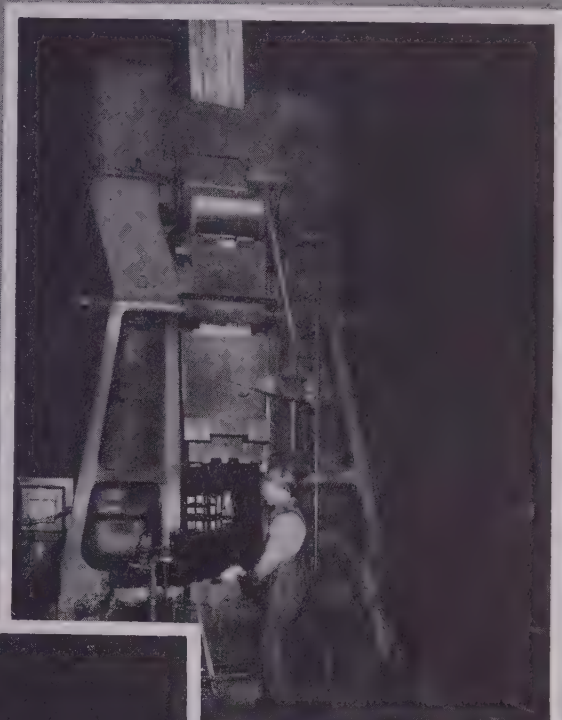
Suit Causes Scarcely a Ripple

CIVIL suit filed by the federal government's antitrust division against DuPont, seeking to require it to dispose of heavy stock interests in General Motors and United States Rubber, and to cancel existing contracts for product sales to these two companies, created scarcely a ripple in Detroit. The suit also seeks to enjoin GM from its 50 per cent stock interest in Ethyl Corp., manufacturer of antiknock fluids for gasoline. Relationships between all these companies have been a matter of public knowledge for years, and the action of the Justice Department was interpreted by some as another attack on big business just because it is big. DuPont is said to own about 23 per cent of the outstanding GM common stock.

CHAMBERSBURG



**MODEL "T"
BOARD DROP HAMMER**
*Designed for cutting
and similar work in concrete*



**MODEL "J-2"
BOARD DROP HAMMER**
*The most productive
Board Drop Hammer*



**GECO-DROP
PISTON-LIFT, GRAVITY DROP HAMMER**
The Best Gravity Drop Hammer

GRAVITY DROP HAMMERS

Leaders in Their Respective Fields

Otis To Make Doors

Company abandons subcontracting for elevator doors, will build its own by August

OTIS Elevator Co., Jersey City, N. J., abandoning a traditional practice of the elevator industry in subcontracting for entrance doors, will manufacture its own beginning in August at a Harrison, N. J., plant.

The growing use of power-operated doors makes this unit an integral part of the operating mechanism of the elevator, said L. A. Petersen, company president, who also indicated that the shift is being made to help co-ordinate delivery and installation of all component parts. For more than 20 years elevator doors have been manufactured by Otis-Fensom Co. of Canada, an Otis subsidiary, and the knowledge and experience thus gained will be utilized in the U.S.

Harrison Plant—Doors will be made in a 212,600-sq-ft building in Harrison which was used by Otis during the war to manufacture crank cases for aircraft engines. This plant adjoins the company's Harrison elevator works.

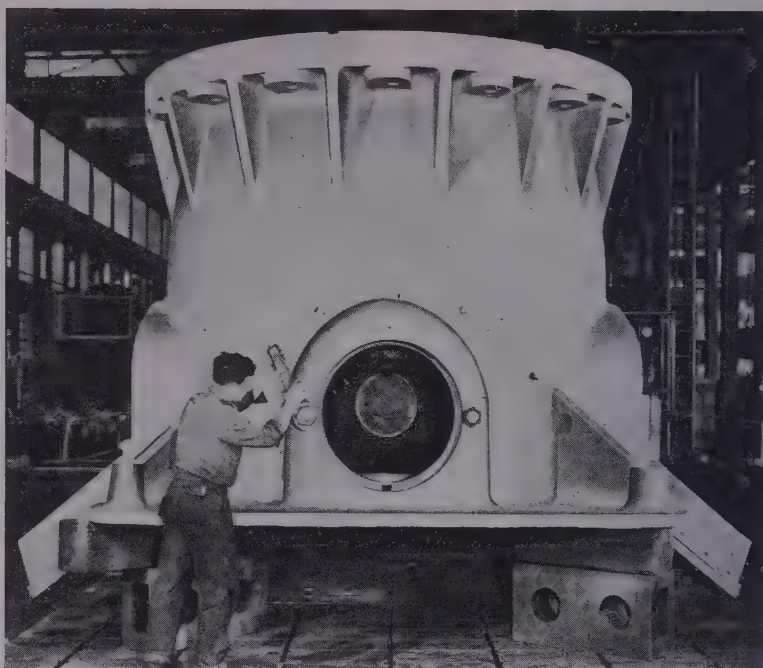
Output capacity will be 100 passenger doors during August and will be gradually increased until 1000 doors per month are turned out early in 1950. Production of freight elevator doors will start with 20 monthly and be increased 50 per month until a capacity of 200 monthly is reached next February. The initial stage of the program calls for manufacture of four types of passenger doors: Single swing, single-slide, two-speed and center-opening. Freight doors will be made in both the manual and power-operated types.

New Reynolds Division Set Up

REYNOLDS Metals Co. has established a Chemical Division to handle its line of specialties used by the chemical industry. Among the products currently produced is R. R. aluminum used in refining certain metals, in producing "hot tops" for large castings in the foundry industry, in deoxidizing steel when casting ingots and for removing occluded gases in steel manufacture.

Ampco Moving to Massachusetts

GREENFIELD Tap & Die Corp. announces removal of its Ampco Twist Drill manufacturing facilities from Jackson, Mich., to Greenfield, Mass. Actual moving is now underway and



KING-SIZE CASTING: This 57-ton casting poured and bored at the Bethlehem, Pa., plant of Bethlehem Steel Co. is the bottom section for a gyratory crusher. Top diameter of the section is 11 feet, height nearly 9 feet. On either side, at the bottom, are chutes out of which the crushed material, such as rock, will flow

is expected to be completed by Sept. 1.

Corporate structure of Ampco Twist Drill Corp. has been dissolved and all assets transferred to Greenfield where a complete drill making establishment is being set up. Ampco sales organization will continue as an independent unit, also with headquarters in Greenfield.

New Wire Plant on Coast

PRODUCTION is now underway in the new \$1.5 million wire products plant of L. A. Young Spring & Wire Corp. at San Leandro, Calif. All equipment has been removed from previous facilities at Oakland.

Said to be the world's largest manufacturer of diversified wire products, the company has its headquarters in Detroit, with branch plants at Los Angeles and San Leandro.

New Division for Parker Mfg. Co.

PARKER Mfg. Co., Worcester, Mass., has acquired Ackermann-Steffan Co., Chicago, manufacturer of coping, jig, power machine and jewelers' saw blades and coping, jewelers', scroll and hack saw frames.

The Chicago firm will be known as Ackermann-Steffan Division of Par-

ker and will continue to manufacture the same group products at its Chicago plant, 4532 Palmer St. Parker makes hack saws, screw drivers and related products.

Elmes Engineering Moves

ELMES Engineering Division of American Steel Foundries has moved all its departments from Chicago to larger quarters at 1150 Tennessee Ave., Cincinnati.

Elmes manufactures presses for metal forming and drawing, plastic molding, extrusion, briquetting and many special applications; a complete line of high pressure pumps; and other products.

Zirconium Output Boosted

ZIRCONIUM production at the Albany, Ore., pilot plant of the Bureau of Mines is being stepped up from 300 pounds a month to approximately 4000 pounds monthly in response to increasing demands from the Navy, the Atomic Energy Commission and other government agencies that are studying the properties of this metal and its potential uses. The bureau continues its effort to produce zirconium without the 1.5 to 3.5 per cent hafnium now contained in the product.

Briefs

Paragraph mentions of developments of interest and significance within the metalworking industry

Fairchild Engine & Airplane Corp., Farmingdale, N. Y., has licensed **United Engine & Machine Co.**, San Leandro, Calif., to use its A1-Fin process for molecular bonding of aluminum to steel in manufacture of aluminum alloy pistons.

Hobart Bros. Co., Troy, O., has appointed **Virginia Welding Co.**, Charleston, W. Va., as distributor of its line of welding equipment covering most of the counties of West Virginia.

Harry Ferguson Inc., Detroit, maker of tractors and farm tools, has introduced a new three-plow conversion kit for changing its two-bottom plow into a three-bottom moldboard implement in less than 30 minutes.

American Brake Shoe Co., New York, has contracted to purchase a former war plant at 344 Vulcan St., Tonawanda, N. Y., from War Assets Administration. The plant was operated during the war by **Farrel-Birmingham Co.** for manufacture of marine propulsion equipment and will be used by **Brake Shoe's Ramapo Ajax Division**.

Progressive Electronics Co., Passaic, N. J., has developed two units for simultaneously folding and applying heat to sheet materials such as vinyl plastic film. The smaller unit is capable of producing a fold 12 inches long while the larger unit will make 24-inch seams.

Babcock & Wilcox Co., New York, has made the first shipment on an order for six boilers to be used at the Moss Landing, Calif., steam plant of **Pacific Gas & Electric Co.** to deliver steam to three 100,000 kw turbo-generators. The shipment which comprised 30 per cent of the necessary material was loaded on 45 freight cars at the company's Alliance and Barberton, O., plants and was the largest single shipment ever made by B & W.

Wickes Bros., maker of heavy machine tools and other metalworking machinery, division of **Wickes Corp.**, Saginaw, Mich., has opened a factory branch office at 414 New Center Bldg., Detroit. Joseph A. Oeming is district manager.

Carboloy Co. Inc., Detroit, manufacturer of carbide tools, has named **Pye-Barker Supply Co.**, Atlanta, as a

distributor for the Atlanta and northern Georgia area.

Texas Engineering & Mfg. Co., Dallas, has received a contract from **Boeing Airplane Co.**, Seattle, to design and manufacture 67 separate production tooling items for the **Boeing B-47**, six-jet bomber.

Hartford Special Machinery Co., Hartford, Conn., has purchased the special drilling machinery line formerly made by **Langelier Mfg. Co.**, Cranston, R. I., now in process of liquidation. **Hartford** has also bought rights to make an automatic thread roller machine and a die polishing machine.

Kellex Corp., subsidiary of **M. W. Kellogg Co.**, New York, has begun operations in new laboratory facilities for chemical and physical research for the U.S. Atomic Energy Commission. **Kellex** will develop and test chemical processes concerned with AEC's nuclear reactor development program.

Plasteel Products Co., Washington, Pa., maker of steel roofing, siding and accessories, has appointed **Buie-Lunsford Co.** as representative in the Houston area.

Rohm & Haas Co., Philadelphia, chemical manufacturer, has signed a contract with the Army to organize and operate a laboratory for basic research and development in rockets and jet propulsion.

Indus Tool & Mfg. Corp. has changed its name to **Indus Corp.** General offices remain at the Indianapolis plant which will continue to manufacture special machinery. A new assembly plant at Greencastle, Ind., will fabricate and assemble metal products, particularly stampings and welded items.

Worthington Pump & Machinery Corp., Harrison, N. J., is expanding its Water Treating Equipment Sales Division and moving the manufacturing operations of that unit from Harrison to the Dunellen, N. J., works.

Benerson Corp., Detroit, newly formed, has purchased the tool and die division of **Holsclaw Bros. Inc.**, Evansville, Ind. **Holsclaw** will continue to manufacture tube benders, boat trailers, field spray equipment and other items. **Benerson** will carry

on the tool and die business in the **Holsclaw Bldg.** in Evansville. **Benerson** is owned by B. A. and Arthur Waderlow, New Center Bldg., Detroit.

General Motors Corp. reports 59 per cent of its 435,862 shareholders own from 1 to 25 shares each. No individual holds as much as 1.5 per cent of the outstanding common stock.

Dunbar Glass Corp., Dunbar, W. Va., has retained **J. O. Reinecke & Associates**, Chicago, as styling consultant.

Society of the Plastics Industry Inc., New York, has published the first edition of "Who's Who in Plastics," an index of the affiliation, experience and training of persons in the plastics industry.

Falls Stamping & Welding Co., Cuyahoga Falls, O., has purchased **Andal Mfg. Co.**, Akron, maker of metal doorway canopies, awnings, shutters and other building specialties. **Andal**, previously owned by **Andrews-Alderfer Processing Co.**, will move to a new building being erected in Cuyahoga Falls.

Allis-Chalmers Mfg. Co., Milwaukee, has introduced a new 8500 pound grader developing 34.7 hp. The unit is in the low-priced field.

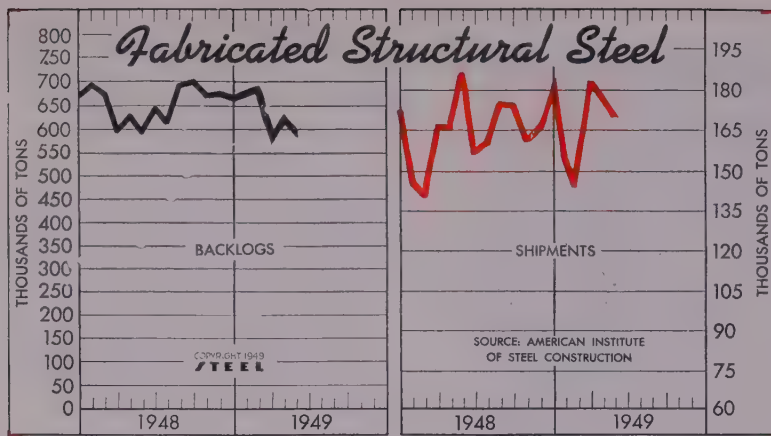
Quaker Oats Co., Mechanical Research Department, Rochester, N. Y., has taken over **Ritter Products Corp.**, Rochester, formerly a subsidiary of **Ritter Co.**, and is continuing the development of the **Johnson Process** of electrostatic separation.

Indiana Steel Products Co. has moved its general sales, quotation and accounting departments to its plant at Valparaiso, Ind. Executive offices and the regional sales office remain at 6 N. Michigan Ave., Chicago.

American Washer & Ironer Manufacturers' Association, Chicago, reports factory sales of standard-size household washers in May were second highest of any month this year, totaling 214,000 units, up 9.8 per cent over April but down 41 per cent from May, 1948.

Crown Chemical Co. Inc., manufacturer of inhibitors for the steel industry, is now located at 211 E. South St., Indianapolis.

Allegheny Ludlum Steel Corp., Pittsburgh, has discontinued publishing **Star**, a monthly employee magazine.



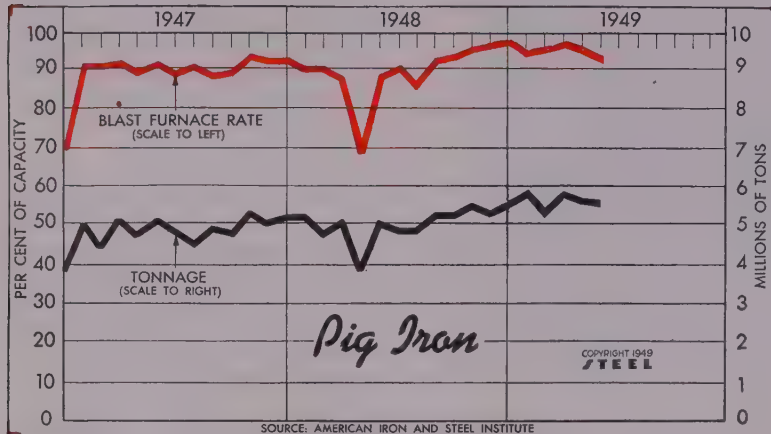
Fabricated Structural Steel

(000 Tons)

	Shipments			Backlogs		
	1949	1948	1947	1949	1948	1947
Jan.	152.7*	146.4	140.6	675	692	661
Feb.	145.9*	141.6	136.1	683	673	656
Mar.	185.9*	167.0	137.8	582	597	614
Apr.	179.1	166.7	157.4	628	630	632
May	168.0	186.9	155.0	599	593	628
June	...	157.1	151.9	...	647	634
July	...	160.8	169.9	...	613	661
Aug.	...	176.3	158.0	...	691	639
Sept.	...	175.0	164.3	...	698	648
Oct.	...	164.0	196.1	...	669	649
Nov.	...	169.8	175.0	...	673	645
Dec.	...	182.4	173.0	...	670	671

Total 1,993.9 1,915.1

* Revised.

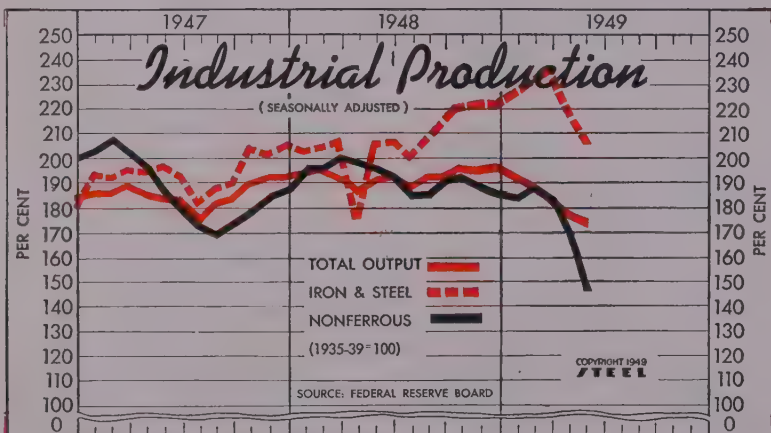


Pig Iron*

	Production (Net Tons—000)			Operating Rate (% of Capacity)		
	1949	1948	1947	1949	1948	1947
Jan.	5,725	5,194	5,071	95.5	90.9	90.8
Feb.	5,223	4,838	4,550	96.5	90.6	90.3
Mar.	5,820	5,020	5,123	97.1	87.8	91.8
Apr.	5,531	3,840	4,830	95.3	69.4	89.3
May	5,517	5,077	5,081	92.0	88.8	91.0
June	...	4,990	4,810	...	90.2	89.0
July	...	4,900	4,585	...	85.9	90.3
Aug.	...	5,255	4,916	...	92.0	88.1
Sept.	...	5,208	4,801	...	94.3	89.0
Oct.	...	5,520	5,228	...	96.6	93.6
Nov.	...	5,399	5,015	...	97.6	92.8
Dec.	...	5,595	5,177	...	98.1	92.9

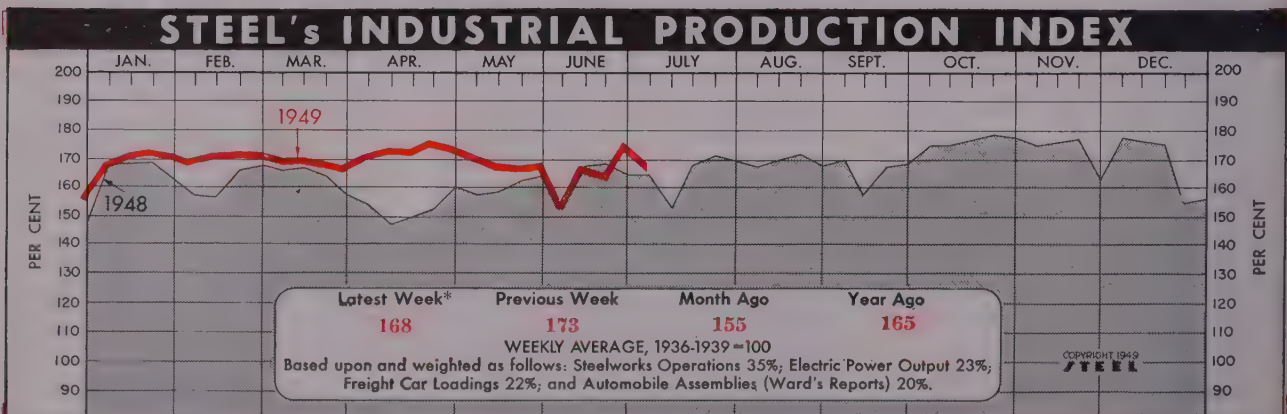
Total 60,849 59,210 Ave. ... 90.2 90.1

* Includes ferromanganese and spiegeleisen.



Federal Reserve Board's Production Indexes (1935-39=100)

	Total Production		Iron, Steel		Nonferrous	
	1949	1948	1949	1948	1949	1948
Jan.	...	191	193	228	203	184
Feb.	...	189	194	232	203	186
Mar.	...	184	192	233	207	183
Apr.	...	179	188	219	177	168
May	...	174	191	204	206	146
June	192	...	207	...
July	186	...	200	...
Aug.	191	...	207	...
Sept.	191	...	214	...
Oct.	195	...	221	...
Nov.	195	...	223	...
Dec.	192	...	222	...
Ave.	192	...	208	...



* Week ended July 2 (preliminary)

The Business Trend

CONTINUATION of the decline in steelworks operations caused STEEL's industrial production index for the week ended July 2 to drop 5 points from the level for the preceding week to a preliminary 168 per cent of the 1936-1939 average. The ingot rate slipped to 80 per cent of capacity, a 4.5 point decline from the preceding week's operations.

AUTOMOBILES—Although passenger car and truck assemblies dropped almost 7000 units during the week ended July 2 to 146,188 units, it was due to the continuing midwestern heat wave rather than to lessened demand. Estimates of the outturn in U. S. plants thus far in 1949 show a total of 2,403,863 passenger cars and 630,415 trucks with Canadian plants adding 86,378 cars and 54,974 trucks.

PRODUCTION—The Federal Reserve Board's seasonally adjusted industrial production index declined to 174 per cent of the 1935-1939 average, compared with 179 per cent in April and 192 in May, 1948. The board's index shows a 6 point decline in manufactures to 179 in May from 185 in April. Durable goods made the largest decline to 201 from 213 in the preceding month while non-durable manufactures dipped only 1 point to an index figure of 161.

COAL—Bituminous coal stockpiles reached a postwar high of 72.7 million tons on June 1, according to the Bureau of Mines. Total industrial stocks were 70.2 million tons on that date, equal to 73 days supply.

RAILROADS—Freight carloadings in the third quarter of 1949 are expected to be 7.4 per cent below

those in the same period of 1948, according to estimates compiled by the 13 Shippers Advisory Boards. These boards co-operate with the Association of American Railroads by preparing estimates of the freight car needs in their regions, enabling the railroads to make plans to handle the expected traffic.

POWER—Federal Power Commission reports that production of energy by electric utilities during May totaled more than 23.3 billion kwhr. The total for May was the highest ever recorded for the month, 3.3 per cent higher than in the corresponding month of last year and 0.6 per cent above April. Installed capacity of generating plants increased 335,539 kw in May, bringing total installed capacity of utility plants to 58,201,883 kw at the end of the month.

BUSINESS—New business incorporations numbered 7445 in May, a gain of 2.4 per cent over the April total of 7273 but 9.7 per cent below the 8246 charters issued in May, 1948. In the first five months of 1949 there were 36,623 new incorporations, marking a progressive decline from 1946 when new enterprises were at their height.

SALES—Manufacturers' sales in May totaled \$16.1 billion or \$700 million below April, while inventory book values declined \$600 million to about \$30.7 billion. The Commerce Department points out, however, that because of the continued downward movement in wholesale prices in May the decrease in physical volume was not so great as the change in dollar figures.

BAROMETERS of BUSINESS		LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
INDUSTRY	Steel Ingot Output (per cent of capacity)†	80.0	84.5	92.0	95.0
	Electric Power Distributed (million kilowatt hours)	5,350‡	5,466	5,081	5,166
	Bituminous Coal Production (daily av.—1000 tons)	1,964	350	1,886	2,126
	Petroleum Production (daily av.—1000 bbl.)	4,850	4,889	4,897	5,484
	Construction Volume (ENR—Unit \$1,000,000)	\$180.9	\$215.2	\$123.1	\$160.9
	Automobile and Truck Output (Ward's—number units)	146,188	153,001	98,087	112,307
*Dates on request. †1949 weekly capacity is 1,843,516 net tons. 1948 weekly capacity was 1,802,476 net tons. ‡Preliminary.					
TRADE	Freight Carloadings (unit—1000 cars)	795†	803	699	757
	Business Failures (Dun & Bradstreet, number)	190†	196	165	103
	Money in Circulation (in millions of dollars)‡	\$27,426	\$27,345	\$27,515	\$27,900
	Department Store Sales (changes from like wk. a yr. ago)†	—6%	—8%	—7%	+7%
†Preliminary. ‡Federal Reserve Board.					
FINANCE	Bank Clearings (Dun & Bradstreet—millions)	\$13,499	\$15,453	\$10,287	\$14,056
	Federal Gross Debt (billions)	\$251.6	\$251.3	\$251.7	\$252.4
	Bond Volume, NYSE (millions)	\$12.4	\$13.4	\$13.3	\$18.8
	Stocks Sales, NYSE (thousands)	3,334	3,405	3,742	4,764
	Loans and Investments (billions)†	\$62.6	\$62.6	\$62.3	\$62.9
	United States Gov't. Obligations Held (millions)†	\$34,515	\$34,867	\$34,145	\$34,869
†Member banks, Federal Reserve System.					
PRICES	STEEL's Composite Finished Steel Price Average	\$91.82	\$91.82	\$92.77	\$80.27
	STEEL's Nonferrous Metal Composite‡	164.6	165.0	173.7	201.3
	All Commodities†	153.1	153.2	156.1	167.2
	Metals and Metal Products†	165.6	165.6	167.3	159.8
	†Bureau of Labor Statistics Index, 1926 = 100. ‡1936—1939=100.				

Men of Industry



FRANK B. NIMMO



PAUL W. PHENEGER



WALTER W. RECTOR

Frank B. Nimmo has been elected president, Fretz-Moon Tube Co., Butler, Pa., succeeding the late **Dana Fox**. Mr. Nimmo has held the position of executive vice president and treasurer of Lumsden & Van Stone Co., Boston, which he joined in 1940. He had previous association with Central Tube Co., and with Spang, Chalfant & Co., now a division of National Supply Co.

—o—

Frank J. Sikorovsky, president and general manager of the former Ampco Twist Drill Corp., Jackson, Mich., becomes a vice president and director of Greenfield Tap & Die Corp., Greenfield, Mass., purchaser of the former company. The Ampco sales organization will continue as an independent unit, also with headquarters in Greenfield.

—o—

Arthur O. Woldridge has been appointed branch manager of the Washington office, recently established by the Ozalid Division, General Aniline & Film Corp., New York.

—o—

John J. Summersby has been elected vice president in charge of sales, Worthington Pump & Machinery Corp., Harrison, N. J. He joined the Cincinnati Works of the company in 1916 as a student engineer, and was later assigned to the St. Paul district office where he became district sales manager. He was manager, Holyoke Works sales, from 1929 to 1931, and assistant general sales manager until 1934, when he was appointed assistant vice president and general sales manager.

—o—

O. M. Haseltine has been appointed sales engineer, Ajax Electric Co.,

Philadelphia. He will maintain offices at Chicago, from which he will cover northern Illinois, northwestern Indiana, southern Wisconsin and Iowa. He was formerly connected with Service Associated.

—o—

Paul W. Pheneger has been appointed assistant to the president of Superior Steel Corp., Carnegie, Pa. He has been connected with the Operating Division of the company since 1947, and prior to joining Superior was with Michigan Seamless Tube Co., South Lyon, Mich.

—o—

William W. Hopwood has been elected vice president of Hagan Corp., Pittsburgh, and its subsidiaries. He has been associated with the corporation and subsidiaries for many years.

—o—

C. Hix Jones, formerly assistant sales manager in charge of the Detroit office, Youngstown Sheet & Tube Co., has been appointed district sales manager there, succeeding **Robert J. Mullally**, retired after 29 years' association with the company, 21 of them in charge of the Detroit office.

—o—

David W. Jones Jr. has been appointed sales agent, LaSalle Steel Co., Chicago, covering Colorado, Utah and Wyoming. He will have headquarters at Denver. Mr. Jones was formerly associated with U. S. Steel Corp. in Denver, Cincinnati and Chicago.

—o—

John W. Belanger, assistant general manager, apparatus department, General Electric Co., Schenectady, N. Y., has been elected to the board of directors of Allegheny Ludlum

Steel Corp., Pittsburgh, succeeding **Henry V. Erben**, General Electric vice president, who resigned his directorship in the steel company.

—o—

Walter W. Rector, formerly executive vice president and general manager of American Fork & Hoe Co., Cleveland, has been elected president of True Temper Corp., new corporate name adopted by shareholders of American Fork & Hoe Co. **A. F. Fifield**, former president, was elected chairman of the board of directors. **J. C. Goddard**, vice president and secretary, was elected to the board of directors. Others newly elected to office are: **G. E. Dickinson**, vice president of labor relations; **B. L. Brockelhurst**, controller. **John O. Findeisen** continues as vice president and general sales manager; **L. H. deForest** as treasurer; and **O. H. Walther** as assistant secretary.

—o—

A. J. Frieling, for the past 15 years a representative of various firms in the industrial sales field in the Michigan-Ohio area, has joined Stewart-Warner Corp. as field sales representative, working out of the Detroit office.

—o—

J. F. Wulfetange Jr. has been appointed eastern New York representative for Automatic Control Co., St. Paul, manufacturer of automatic liquid level controls. He will be available for information and service on company installations in that area, as well as handling engineering and sales.

—o—

E. F. Allison has been appointed to the newly created post of field sales and service manager for Fansteel



"BETTER ASSEMBLY for Half the Cost"

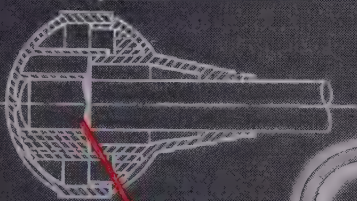
REPORTS ***Lovell***

WORLD'S LARGEST
MANUFACTURERS OF WRINGERS
Erie, Pennsylvania

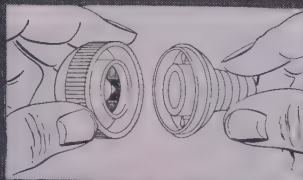
"We first considered the use of a grooved shaft and a drop-in pin as the best method of applying a plastic knob to the Lovellette wringer handle," states Mr. W. L. Kauffman, Chief Engineer of Lovell Manufacturing Co. "We found, however, that the easy attachment and secure locking provided by Tinnerman SPEED NUTS made a better assembly. We were also pleased to discover that the SPEED NUT assembly cost was about one-half as much as the other method considered!"

This 50% saving is another positive demonstration of the cost-reducing, product-improving qualities of the SPEED NUT brand of fasteners. To learn how effectively SPEED NUT assembly advantages can be adapted to your product, call in your Tinnerman representative—he's listed in major city phone directories. TINNERMAN PRODUCTS, INC., 2040 Fulton Road, Cleveland 13, Ohio. In Canada: Dominion Fasteners Limited, Hamilton.

Diagram below shows how Push-On Type SPEED NUT receives shaft of wringer handle. Prongs of SPEED NUT "bite" into shaft, securely locking knob in position.



After SPEED NUT is positioned in cavity of knob cap, the two sections are sealed together with acetone. Then knob is easily pushed on wringer handle. Knob molded by Perry Plastics, Inc., Erie, Pa.



TINNERMAN

Speed Nuts

*Trade Mark Reg. U. S. Pat. Off.

FASTEST THING IN FASTENINGS

Metallurgical Corp. at North Chicago, Ill. This position was created to improve service to customers and build a closer liaison between field sales engineers and production and engineering activities. Mr. Allison will divide his time between the general office at North Chicago and branch offices throughout the industrial sections of the country. He had previously been stationed at Cleveland as district manager of the Ohio, western Pennsylvania and western New York sales area.

Grant E. Scott Jr. has been appointed assistant sales manager, Klipfel Valves Inc., a division of Hamilton-Thomas Corp., Hamilton, O. He was previously associated with Wright Aeronautical Corp. as test engineer, and with Allis Chalmers Mfg. Co. as field and sales engineer.

Harold H. Watson, commercial engineer for the construction materials department, Bridgeport, Conn., General Electric Co., has left Bridgeport to attend technical meetings in Norway and Great Britain.

J. E. Brent, general sales manager, International Business Machines Co. Ltd. of Canada, with headquarters in Toronto, Ont., has been elected vice president of that company which he joined in 1931. He served on the company's sales staffs in Toronto and Montreal, and was sales manager in London, Ont., and later in Montreal. Mr. Brent was placed in charge of all company sales in 1945.

Personnel changes in the Pigment Division, Reynolds Metals Co., Louisville, have been announced as follows: **A. P. Fleming**, formerly located at the Philadelphia office, has been transferred to New York as sales manager, a newly created po-

sition; **F. W. Allsmiller**, assistant sales manager, has been transferred from New York to Louisville; **J. W. Macauley**, New York office, has been assigned to Philadelphia and Pittsburgh territories, with headquarters in Philadelphia; **E. F. Reilly** has been transferred from San Francisco to Kansas City, and assigned to the Central States Division; **A. H. Kleinfeldt** has been appointed assistant to **Gordon M. Babcock**, technical director; **L. H. Besten** has been placed in charge of sales service in the New York office; and **L. V. Sheain** has been transferred from the Pigment Division to the newly formed Chemical Division.

Oscar N. Lindahl, vice president of finance, Carnegie-Illinois Steel Corp., Pittsburgh, subsidiary of U. S. Steel Corp., has retired after 42 years of service with the company.

Carl A. Mitcheltree has been appointed assistant superintendent of the cold strip mill at Midland Works of Crucible Steel Co. of America, Pittsburgh. He formerly was associated with Youngstown Sheet & Tube Co. as superintendent of cold mills at its Indiana Harbor Works.

J. L. McDermott has been appointed manager of the Ryertex Division, Joseph T. Ryerson & Son Inc., Chicago. He succeeds **Kenneth T. MacGill**, who is retiring after 32 years of service with the company. Mr. McDermott previously served as western sales manager of the division. He has been with the company since 1923, serving as sales representative in Cleveland and Pittsburgh, respectively, prior to taking up headquarters at Chicago last year.

Van M. Darsey, president, and **Walter R. Cavanagh**, development

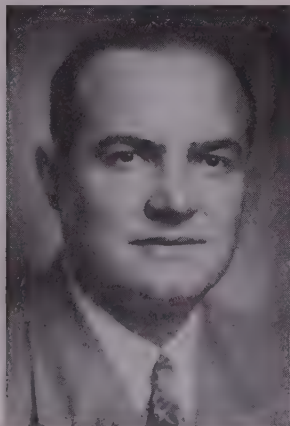
laboratory manager, Parker Rust Proof Co., Detroit, received the Sam Tour Award at the annual meeting of the American Society for Testing Materials at Atlantic City, June 28. It was presented for their paper "Apparatus & Factors in Salt Fog Testing," which represented findings of recent research carried on in the Parker Rust Proof Co. laboratories in accelerated testing of metals and finishes by the salt spray test.

Carl A. Bjelke, controller of Doehler-Jarvis Corp. at Toledo, O., will be on indefinite leave of absence. He joined the company 28 years ago. **Lester B. Johnson**, chief plant accountant in Toledo since 1945, succeeds Mr. Bjelke as controller.

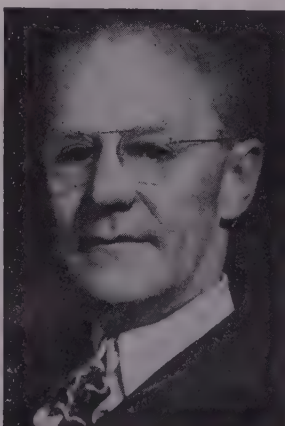
Harry O. Lang, a vice president, Hepenstall Co., Pittsburgh, and in charge of the sale of steel forgings in the Detroit area, has been awarded the firm's President's Trophy.

Robert Dick has been elected executive secretary of the Institute of Cast Iron Soil Pipe & Fittings Manufacturers, New York, and the following have been elected officers of this newly created organization: **J. J. Nolan Jr.**, vice president, Central Foundry Co., New York, president; **Deems W. Hallman**, Hajoca Corp., Philadelphia, treasurer; and **George L. Harberger**, Eastern Foundry Co., Boyerstown, Pa., vice president. Members of the executive committee are Mr. Nolan, **Charles A. Hamilton**, Alabama Pipe Co., and **William Deyo**, Anniston Foundry Co., both of Anniston, Kans.

Appointments in the field sales organization of Oldsmobile Division, General Motors Corp., Detroit, are: **C. A. Blake**, midwest regional manager, with headquarters at Chicago, promoted to assistant sales manager



J. E. BRENT



J. L. McDERMOTT



ROBERT DICK



ANY SHAPE

Bulky blooms, smooth sheets, shapely I-beams, bars, rods . . . Ohio Rolls do every rolling job efficiently and economically. You'll get higher tonnage between dressings when you use Ohio Rolls. And, at year's end, your profit statement will shape up better.

Select from any of these eleven types of Ohio Steel and Iron Rolls:
Carbon Steel Rolls, Ohioloy Rolls, Ohioloy "K" Rolls, Holl-O-Cast Rolls, Chilled Iron Rolls, Alloy Chilled Iron Rolls, Denso Iron Rolls, Nickel Grain Rolls, Special Iron Rolls, Nioloy Rolls, Flintuff Rolls.



Ohio Rolls

SHAPING METAL FOR ALL INDUSTRY

THE OHIO STEEL FOUNDRY COMPANY

LIMA, OHIO

Plants at Lima and Springfield, Ohio

in charge of the central region, with headquarters in Lansing, Mich.; **W. O. Lampe**, zone manager in Chicago, has been promoted to assistant sales manager to have charge of the mid-west region, continuing headquarters in Chicago; **F. Q. Murphy**, assistant sales manager in New York, will continue to operate in charge of the Atlantic region; **H. F. Banks**, in charge of the central region, will assume similar responsibilities in a southern region now being established with headquarters in Memphis, Tenn.; **B. N. Barber**, assistant zone manager in Chicago, becomes zone manager, and will be assisted by **P. J. Monaghan**, former production manager of factory operations at Lansing.

Lester L. Lessig has been appointed contracting manager, Philadelphia sales district, Bethlehem Steel Co., Bethlehem, Pa. He succeeds **Frank U. Kennedy**, retired, who has held the position since 1920.

Ken Jackson has been appointed sales representative in Pennsylvania for Camcar Products Co., Rockford, Ill. He previously represented American Screw Co.

James F. Clark has been elected treasurer, American Car & Foundry Co., New York, to succeed **Lester A. Blackford**, who has been with ACF for 44 years, and is retiring from active service.

Winston Jones, former Conlon Division sales manager, Conlon-Moore Corp., Chicago, has been appointed sales director for both the Conlon and Moore Divisions in the mid-South territory of Illinois, Kentucky, Missouri and Tennessee. He will continue his headquarters at Chicago.

B. E. Harris has been elected a vice president of Ford, Bacon & Davis, engineer-constructor of New York, Chicago, Philadelphia and Los Angeles. He has been with the firm since 1923.

Lawrence E. Dickson, president, Standard Safety Equipment Co., Chicago, was elected president of Industrial Safety Equipment Association Inc., New York, for the second consecutive year.

Emil Buban has been appointed factory superintendent, Detroit Harvester Co., Detroit.

Charles E. Anderson has been appointed district sales representative, Sprague Electric Co., North Adams,

Mass., with offices at Cleveland. He will cover Ohio, West Virginia, western Pennsylvania, and northern Kentucky.

Gen. Brehon Somervell, president, Koppers Co. Inc., Pittsburgh, has been elected a member of the board of directors, Carborundum Co., Niagara Falls, N. Y.

John A. Kelly has been named assistant to the manager of sales, construction materials department, General Electric Co., Bridgeport, Conn.

Joseph N. Moorhead has retired as works manager of American Magnesium Corp.'s Buffalo plant. He is succeeded by **S. H. Bennett**, industrial engineer in the Cleveland plant.

Alex F. Osborn and **Hamilton H. Wende** have been elected directors of Rigidized Metals Corp., Buffalo. Mr. Osborn is vice chairman of Batten, Barton, Durstine & Osborn Inc. and Mr. Wende is former Buffalo division manager of the Texas Co.

Franklin A. Ulrich has been appointed controller of Fedders-Quigan Corp., Tonawanda, N. Y. He takes over duties formerly handled by **William C. Winkler**, who relinquished those duties to devote more time to his positions as treasurer and director of the firm.

Vapor Heating Corp., Chicago, has appointed **Dana Pierce** to handle sales of Vapor temperature controls to the aircraft industry on the West Coast, working out of the Los Angeles office.

F. E. Schuchman has been elected president, Homestead Valve Mfg. Co., Coraopolis, Pa., valve and pioneer steam cleaner manufacturer. He also holds the title of general manager and treasurer. **W. R. Schuchman** was named chairman of the board after 28 years as president, and **J. E. Roth**, former board chairman, was named chairman of the advisory committee. **Bradley McCormick** was elected secretary, and **N. E. Kolesar**, assistant treasurer.

James W. Dickey has been appointed vice president and treasurer, Cleveland Chain & Mfg. Co., Cleveland. He has been affiliated with the company for the past three years. In addition to his duties with Cleveland Chain, Mr. Dickey will hold similar positions with Cleveland's four associated companies: Bridgeport Chain & Mfg. Co., Bridgeport, Conn.; Seattle Chain & Mfg. Co., Seattle; Round Califor-

nia Chain Co., San Francisco; and Woodhouse Chain Works, Trenton, N. J. Mr. Dickey will also serve as a member of the board of directors of each company.

William Gillett, vice president, Detroit Steel Products Co., Detroit, has been elected to the board of directors of Producers Council, national organization of manufacturers of building materials and equipment.

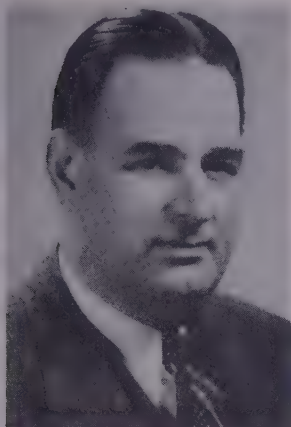
Almon W. Copley, manager of engineering and service on the West Coast for Westinghouse Electric Corp., has retired after 46 years with the company.

Baker-Raulang Co., Baker Industrial Truck Division, Cleveland, announces appointment of **John A. Matousek** as manager of manufacturing, in charge of manufacturing, purchasing and engineering functions. His previous experience includes consultant to the general manager of Bohn Aluminum & Brass Corp., Detroit; division manager of the Detroit plant of Hupp Corp.; general superintendent, Galanot Products Co.; and as assistant to the vice president in charge of manufacturing, Cleveland Graphite Bronze Co. **E. H. Remde**, formerly works manager, Baker-Raulang Co.'s Industrial Truck Division, has been appointed to the newly created post of adviser to the president on engineering and manufacturing in that division; **H. A. Schultz**, formerly superintendent, has been appointed manufacturing engineer; and **I. L. Young**, general superintendent.

T. M. Robie, manager of the Diesel Division, Fairbanks, Morse & Co., Chicago, has been appointed director of quality control for the firm's Beloit Works at Beloit, Wis. He has been succeeded at Chicago by **J. W. Wright**, recently manager of the diesel engine sales department, Kansas City, Mo., branch.

W. A. Walker has been elected vice president of accounting and a director of Carnegie-Illinois Steel Corp., U. S. Steel Corp. subsidiary. He joined U. S. Steel Corp. of Delaware in 1946 as audit supervisor, following affiliation with Carnegie-Illinois Steel Corp., to which he returned in 1949 as assistant to the vice president of finance, the position he held when elected to his present office. **John K. Banville** has been appointed assistant treasurer, Carnegie-Illinois, with offices in Chicago, succeeding **Norris E. Crull**, retired after 40 years' service with U. S. Steel subsidiaries.

Weston Electrical Instrument Corp.,



STERLING G. MAISCH

Appointed production manager, Axle Division, Eaton Mfg. Co., Cleveland. Noted in STEEL, July 4 issue, p. 56



FRANK R. KOHNSTAMM

Elected president and chief executive officer, Jack & Heintz Precision Industries Inc., Cleveland. Noted in STEEL, July 4 issue, p. 56



CHARLES S. CONRAD

Appointed director of steel sales, Tay-Holbrook Inc., San Francisco. Noted in STEEL, July 4 issue, p. 60

Newark, N. J., and its subsidiary, C. J. Tagliabue Corp., have established a district sales office at Washington, with **Lawrence F. Parachini** as district manager. This new office will serve the District of Columbia and adjacent counties.

George S. Grassmyer has been appointed manager of inspection, Eddystone Division, Baldwin Locomotive Works, Philadelphia. He joined the Baldwin organization in 1941, and

has since been connected with the field service and inspection department.

Gen. John J. O'Brien, who was in charge of all Army real estate during the war, has been elected president and general manager, U. S. Steel subsidiary, Gunnison Homes Inc., New Albany, Ind. **Foster Gunnison**, founder of the company and president since 1935, has been elected chairman of the board of direc-

tors. **William B. Eagles**, one of the company's first dealers, and general sales manager since the war, has been elected vice president, sales.

Don W. Williams, formerly manager of the Los Angeles branch of Pennsylvania Flexible Metallic Tubing Co., has been transferred to Cleveland, where he will serve in the same capacity in the Cleveland office. **E. F. Taylor** succeeds Mr. Williams at Los Angeles.

OBITUARIES...

Joseph L. Dostal, 65, president and treasurer, Dostal Per-Mold Foundry Co., Pontiac, Mich., died July 1. For many years associated with Holley Carburetor Co., Detroit, he was a pioneer in the production of permanent mold gray iron castings, and served 15 years as vice president and general manager of the Foundry Division of Eaton Mfg. Co., Detroit, before organizing his own company in 1945.

J. D. Berg, 66, chief executive officer and a director of Dravo Corp., Pittsburgh, died June 29 at his home in Chatham, Cape Cod, Mass. He headed the corporation since the death of its founders, F. R. and R. M. Dravo, in 1934. He served as board chairman from 1934 to 1946, at which time he was elected chief executive officer.

E. W. Mudge, 79, steel manufacturer in Pittsburgh, died July 1 in that city. He was a director and senior vice president, Fidelity Trust Co., and held vice presidencies in Hanna Furnace Corp. and Michigan Steel Corp. He was a director, vice president and assistant treasurer of National Steel

Corp., director and board chairman of Mudge Oil Co. of Delaware, and a director in the Edgewater Steel Corp.

Thomas J. Digan, 59, vice president and director of United States Steel Export Co., New York, U. S. Steel Corp. subsidiary, died June 30. He had been employed by the export company continuously since 1904.

Carl M. Ott, 56, supervisor of employment, Youngstown district, Youngstown Sheet & Tube Co., died June 26.

Frank H. Colladay, 76, tin plate specialist with Wheeling Steel Corp., Wheeling, W. Va., until he retired in 1947, died at his home in Greenwich, Conn., June 17.

Edward Corcoran, 79, formerly connected with Corcoran Lamp Co., Cincinnati, died July 28. He was founder of the Victor Lamp Co. and the Corcoran Mfg. Co., both of Cincinnati.

Charles C. Bolus, 65, assistant secretary and treasurer, Inland Steel Products Corp., died June 23 at Canton, O. He formerly was associated with Mil-

cor Steel Inc. which Inland Steel Corp. purchased in 1945, remaining at the Milcor plant, Canton, as assistant secretary and treasurer.

John H. Kurlander, head, projection, photographic, and miniature lamp section, commercial engineering department, Lamp Division, Bloomfield, N. J., for Westinghouse Electric Corp., died June 24.

John J. Heinzen, 65, president and general manager, Wausau Iron Works, Wausau, Wis., died recently.

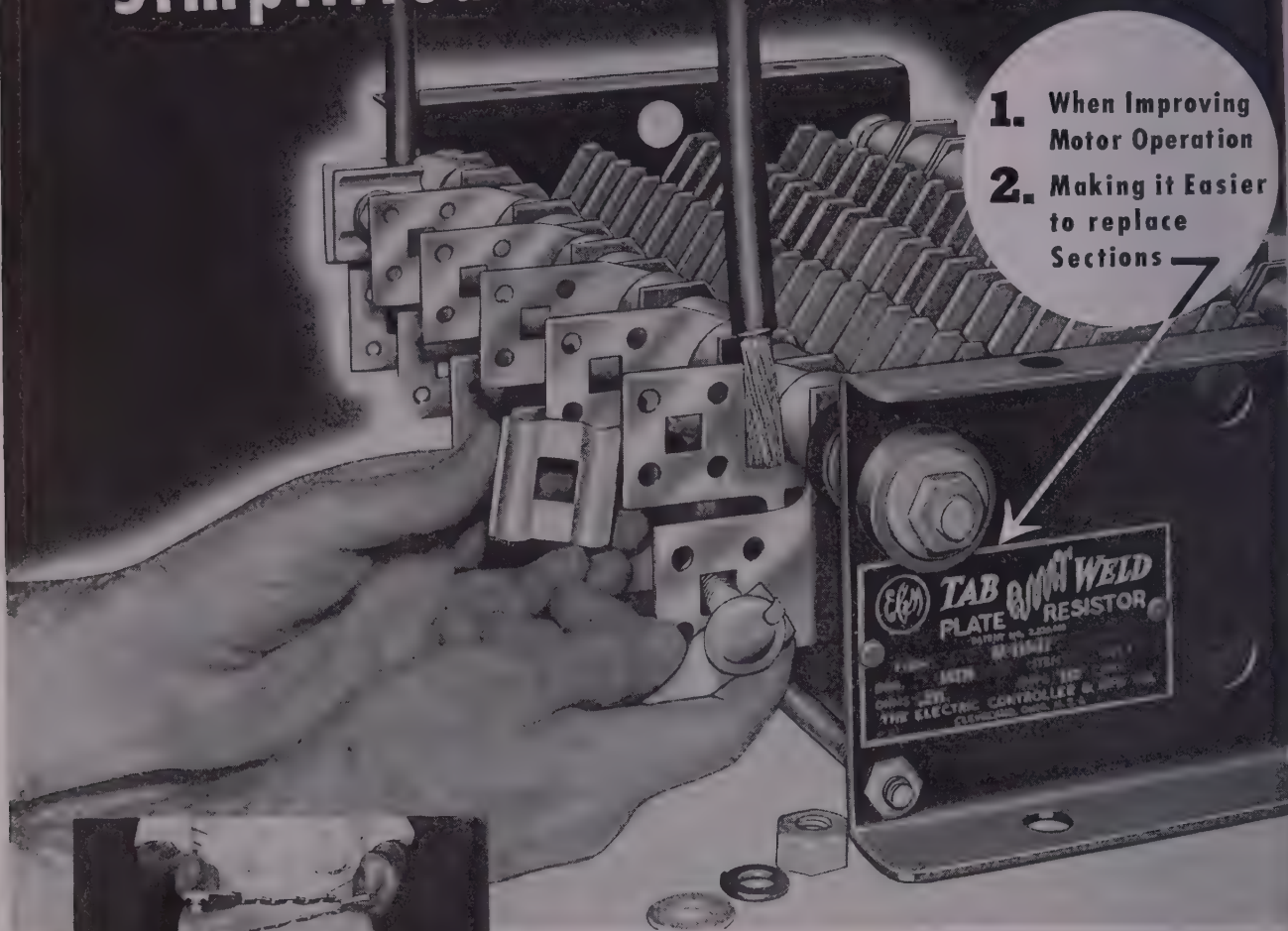
Clifford R. Ramage, vice president and director of purchases, Diamond Chain Co. Inc., Chicago, died June 22. He was associated with the company for 39 years.

George P. Myers, 89, founder of the G. P. Myers Machine Co., Sheboygan, Wis., and active in the concern until his retirement a few years ago, died July 2.

Hector D. MacKinnon Jr., 42, production manager for Beech Aircraft Corp., Wichita, Kans., died recently at his home in Los Angeles.

Simplified TAP Shifting

1. When Improving Motor Operation
2. Making it Easier to replace Sections



★ It's often advantageous to shift taps on a resistor section after installation to improve motor performance. It's equally advantageous, when replacing a section out in the mill, to pick a standard section from the storeroom shelf and use it without disturbing the grid-assembly.

These operations are easy to perform with EC&M TAB-WELD Resistor Sections because tap-plates are fixed in position. Only the terminal block, bolt, and lead are moved. The tap-marking tag moves with the bolt.

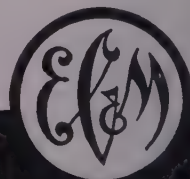
For lower up-keep, prolonged life, and easier maintenance, use EC&M Bulletin 942 TAB-WELD Plate Resistors, made from *corrosion-resistant steel*.

This illustration shows how welding provides a continuous path throughout each section to:

1. Stabilize the resistance value.
2. Eliminate trouble in concealed areas.

EC&M TAB-WELD Resistors do not depend upon *occasional* tightening of end-clamping nuts to *prevent burning at grid-eyes or at tap-plates*.

THE ELECTRIC CONTROLLER & MFG. CO.
2698 EAST 79TH STREET CLEVELAND 4, OHIO



CHUTE "HANDLING"—Three assembly lines utilized to process automobile locks in the plant of Reid Products Division, Standard Products Co., Cleveland, are laid out for maximum economy of floor space and minimum handling of parts. For example, in place of "move men" previously employed to transport parts from station to station, chutes are used to pass components along the line. As each operator finishes an operation, she puts the part on the raised end of a chute, and lets it slide down to the next operator's fingertips. Thus locks start as individual components at one end and leave the other as completed assemblies.

SUPER TRAIN USES ALLOY STEEL CASTINGS—More than 2000 special design alloy steel castings were employed in building the unique passenger cars for ACF-Talgo super train publicized recently. All of these were made to order by Lebanon Steel Foundry, Lebanon, Pa. The castings were produced in a variety of intricate shapes and weights ranging from 1 to 50 pounds, totaling to more than 10 tons. They were employed as various coupler parts and vertical support members in car units which have only two wheels at one end, as main and side shock strut forks, brackets and fittings, buffer attachments, etc.

EXPENSIVE SYNTHETICS—In a talk before the Pittsburgh section of ASME recently, Martin A. Elliott, Bureau of Mines, Bruceton, Pa., pointed out that some appreciation of the magnitude of the development of a sizable synthetic fuel industry may be obtained from the capital and other requirements for the production from coal of 1 million barrels of synthetic fuels per day—approximately one-sixth of our daily domestic petroleum production. An industry of this size, he said, would require a capital investment of \$8.7 billions, 6.4 million tons of steel, an operating force—including miners—of 160,000 men and 210 million tons of coal per year.

HOT-TOP LIFTER—Much time is saved in pit operations and hot top setups at Lukens Steel Co., Coatesville, Pa., as result of a lifter invented by William J. Harrington, pit supervisor in the open hearth department. Invention consists of a pipe with sliding bar arrangement by which patent hot top brick forms are lowered into position below the top edge of ingot molds. Notches in a cut-out section of the pipe and a key on the sliding bar enable the lifter to be adjusted to fit a range of sizes. When used, the device is inserted in the holes of a brick form. This enables the latter to be lifted and lowered into position by an overhead crane.

BEST "TWO"—NOT SO ACCURATE—Practice in engineering investigations of averaging the best two out of three measurements in determining an unknown quantity often leads to less precise results than averaging all three measurements together, it was revealed recently by Dr. W. J. Youden of the Statistical Engineering Laboratory at the National Bureau of Standards, Washington. He pointed out that extensive studies indicated that a rather unbalanced spacing between three measurements occurs quite frequently. In fact, the ratio of the two differences was as much as 16 to 1 in 10 per cent of the sets of three measurements studied. The investigation which covered some 400 sets of three measurements, revealed that in an average of 1 of every 12 sets, one of the measurements was at least 19 times farther away from its neighbor than the difference separating the two closest.

METAL BOOSTING GOAL—Although aim of the newest research center, opened up by General Refractories Co. in Baltimore, will be directed toward higher and higher temperature refractories to aid many industries, one of the first to benefit may be the metal industry. The new facilities will enable investigations on the all-basic open hearth to be intensified. Already phases of the program have passed pilot plant stage with encouraging results. Development of the furnace, it is estimated, will boost production some 30 per cent. (p. 84)

DRAWINGS NECESSARY—In procuring tools, some ten considerations are involved plus an accurate drawing so that there is no misunderstanding of what is wanted. According to C. P. Eisenhower, president, Universal Tool Co., Dayton, O., sufficient analysis cannot be given to obtain the best tool design, if design work is taken competitively. The first idea, he points out, is often carried out, although it may be sound and cost more than if a second idea is introduced. Much can be saved in the cost of building tools if a relatively little more cost is invested in good planning and designing. (p. 87)

SALT-BATH CHROMIZING—Many new developments in corrosion-resistant coatings, plating, and metallurgy of the rare metals were discussed in papers presented before the 95th convention of the Electrochemical Society in Philadelphia recently. Among advances mentioned was one which promises to make more flexible the method of providing chromized corrosion-resistant coatings on a variety of ferrous metals. (p. 90)

ROLLING PROCEDURE DIFFERENT—Hot rolling of vitreous enameling strip, it is pointed out, differs from ordinary strip in that the section must be cooled below 1600° F before entering the No. 2 scale breaker and finishing train. If this is not done, excessive cracks develop on each side of the strip, and it may even fall apart while in the finishing stand. The metal is of low carbon, manganese, phosphor and sulphur content, made under closely-controlled conditions to minimize trouble when coated with porcelain enamel coating—in reality a special glass fused to the surface. (p. 106)

Higher Temperatures

... Goal of New Research

Work of the technicians in this new research center will enable steelmakers to produce their products more rapidly and cheaply and with less labor and process construction than has been heretofore possible

DEVELOPMENT of the all-basic open-hearth furnace and necessary auxiliary processes together with important and vital investigations concerned with higher temperature refractories are some of the programs being handled at the new research and development laboratory recently opened at Baltimore by the General Refractories Co., Philadelphia.

Laboratory buildings were erected and equipped due to the ever increasing demands of industry for lower production costs and improved materials to withstand higher speeds, temperatures and friction. Company officials believe the new setup is far in advance of anything of its kind within the industry today.

It is expected that development of the all-basic open-hearth furnace will increase production of the steel up to 30 per cent. Some phases of the furnace program have already passed the pilot plant stage with outstanding results.

Other portions, still in the development stage, will be expedited by the availability of the new research

and development facilities. Company spokesmen state that the new laboratory contains the largest number and variety of equipment and scientific instruments ever assembled under one roof for the testing and improvement of refractories.

Refractory Industry Lacks Glamour—The refractories industry, which probably ranks second to agriculture in basic necessity, lacks the glamour of other types of production. However, without refractories we would have no heat, light and power, no metals, no manufacturing, and the world would be a far different place than the one which we know today.

The new laboratory located next to General's largest manufacturing plant comprises two units: A single story brick and concrete building designated as the "A" building in Fig. 3 and a steel and glass factory-type structure shown as "B" building. Both are designed and equipped to perform the necessary functions of research, experimentation and development together with all testing that cannot be performed conveniently in the company's district plant laboratories or individual plants.

Unit "A" provides the basic tools of research: A staff conference room, library, such analytical facilities as the chemical laboratory, the spectrograph, the x-ray machine and the petrographic microscopes, instruments for measuring temperature, for determining such refractory properties as thermal expansion



Refractories

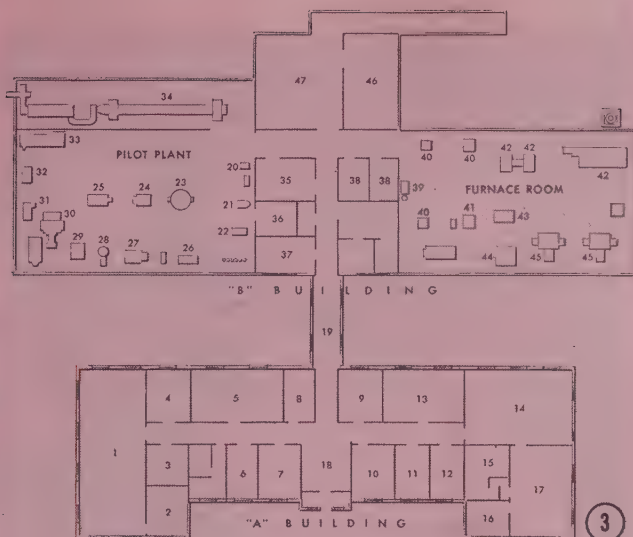
Laboratory

for studying phase equilibrium; and rooms for photographic work and the safe keeping of records. Building "B" provides the facilities for both developing and testing work. The middle section contains equipment for measuring strength and hardness and space for sampling and storage.

Pilot Plant—One wing contains a pilot plant necessary for the basic procedures of crushing, grinding, screening, tempering, molding and drying. The other wing provides furnaces, both oil-fired and electric, needed for development and testing work. Electric units are both of resistance and high frequency types. Adjacent to the pilot plant but outside the main building is located a 3 x 30 foot rotary kiln.

The company's laboratory technicians recently designed a suspended basic roof for use by open-hearth steel manufacturers to meet the demand for a basic furnace roof of magnesite or chrome brick which would enable them to melt scrap more quickly without melting the roof. Previous open hearth roof design had been of the self-supporting type silica-brick arch. But available chrome and magnesite brick were heavier than silica, and at the same time weakened so much faster with the rising temperature, that to use arch construction with basic brick was to invite mechanical failure before chemical attack could determine the brick's true life.

New Processing Method—The laboratory setups in



1. Analytical Chemical Laboratory
2. Balances
3. Chemical Storage
4. Office
5. Pyrometer Calibration
6. Drafting—Supplies
7. Library
8. Record Storage
9. Office
10. Office
11. Photography
12. Thermal Expansion
13. Conference
14. Petrography and Phase Equilibrium
15. Dark Room
16. X-Ray
17. Spectrograph
18. Lobby
19. Ramp
20. Jaw Crusher
21. Screens 18 x 18"
22. Ball Mill
23. Dry Pan
24. Triple Deck Screens—2 x 5'
25. Ball Mill—Air Swept
26. Paddle Mixer
27. Wet Pan
28. Muller Mixing Pan
29. Extrusion Unit
30. Hydraulic Press—450 Tons
31. Hydraulic Press—200 Tons
32. Dryer
33. Stiff Mud Brick Machine
34. Rotary Kiln
35. Testing—Mortars and Plastics
36. Instrument Storage
37. Sampling for Chemical Laboratory
38. Offices
39. P.C.E. Furnaces
40. Electric Furnaces
41. Carbon Disintegration
42. Panel Spalling Test
43. Load Test
44. Hot Modulus of Rupture
45. Reheat Kilns
46. Compressive, Transverse Strength and Hardness Testing
47. Receiving and Storage

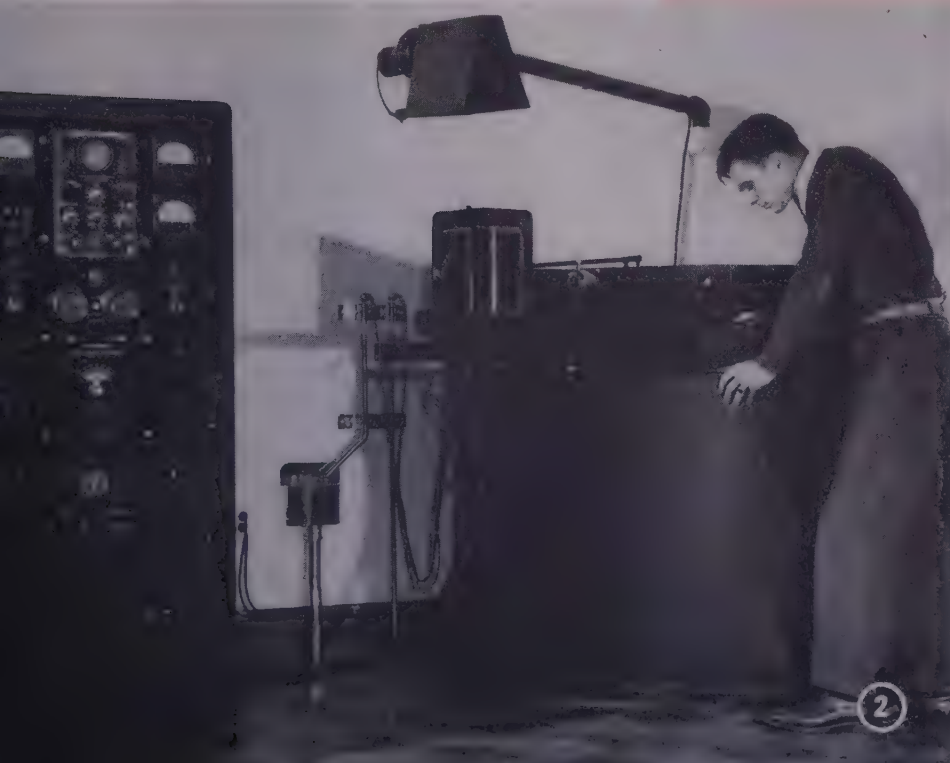


Fig. 1—A portion of the analytical chemical laboratory where quantitative analyses of refractory materials are made

Fig. 2 — Complete equipment is available for analyzing samples by spectrographic means

Fig. 3—General plan of the laboratory and pilot plant

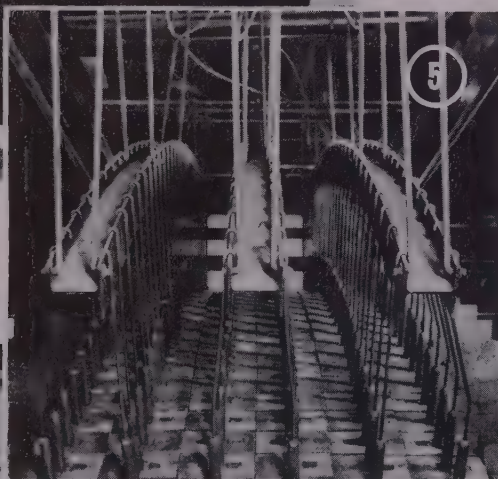
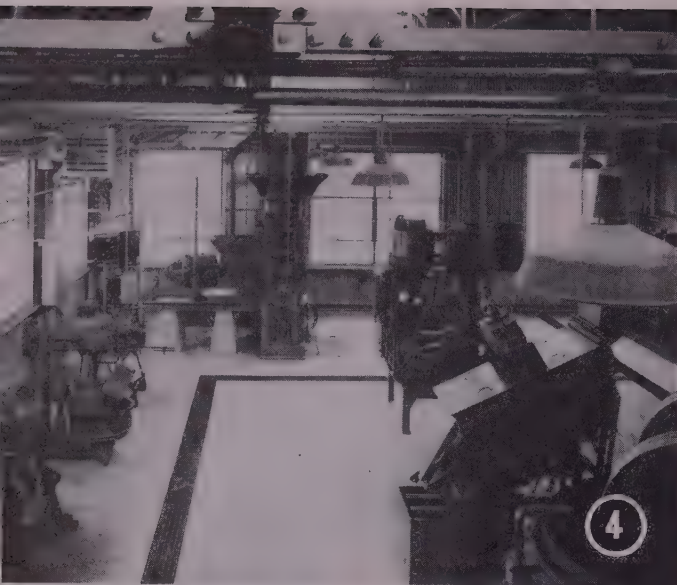


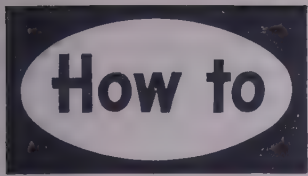
Fig. 6 utilized refractories prepared by pressing chrome-magnesite directly into a steel jacket, a process which was developed by General. Heretofore this operation was performed by first pressing the brick and then providing it with a steel cover. The process was enlarged experimentally to include the pressing-in of a steel end-piece to engage with a hanger secured above the furnace. This improved method of brick suspension is so effective that the brick can be worn to a thickness of about $1\frac{1}{2}$ inches before the steel segments become hot enough to oxidize and fail in service.

In previous roof designs each brick hung straight down independent of all others. In a curved roof, consequently, there appeared a series of steps of square corners which fouled off early and represented a needless material loss. In the laboratory setup the hangers were placed in radial positions so each brick would take the position bricks normally assume in a sprung arch. Instead of letting the hanger bear all the weight, each refractory could now rest against its neighbor on the downhill side of the arch. The resultant arch has a smooth, cylindrical inside surface with most of the weight being carried by overhead steel work but with enough circumferential pressure applied by resilient loading to assure tight joints. The experimental furnace sections were built full size for testing purposes and results showed as little as 20 per cent of the amount of refractories required with standard construction was necessary in the new type roof.

Fig. 4—View of the pilot plant which is completely equipped for duplication of all manufacturing unit operations

Fig. 5—Interior view of partially constructed new type basic roof as set up in the research center. Small photo shows an exterior view of the experimental roof

Fig. 6—In the testing division three tests are in progress in the three furnaces shown. Left to right are a reheat furnace, a load test furnace and a furnace for testing effects of carbon monoxide



PROCURE TOOLS

By following correct procedures in dealing with tool jobbing shops, manufacturers can effect considerable savings both in costs of tools themselves and in final production expenses

By C. P. EISENHAUER

President
Universal Tool Co.
Dayton, O.

SERVICES of tool jobbing shops are universally recognized. They eliminate the need for costly equipment and space which would not be in use a good part of the time, inasmuch as most companies do not have constant tooling requirements. They also eliminate the need for building an organization of skilled mechanics from time to time, when new products have to be toolled.

The various methods of procuring tools are: 1. Design and build together, on a firm quotation; 2. design on a "firm quotation", and quote building from the design; 3. design, "time and material" and quote building from the design; 4. design and build, on time and material basis.

Design and Build on a Firm Quotation—To quote on a tool to do a certain job necessitates that a defi-

nite idea of what the tool is to be, must exist. This can be had only from drawings showing completely what is wanted, or from a complete common understanding between the parties from discussions of what is wanted. This, of course, automatically is limited to having done the exact job before, or very similar jobs, or to very simple jobs.

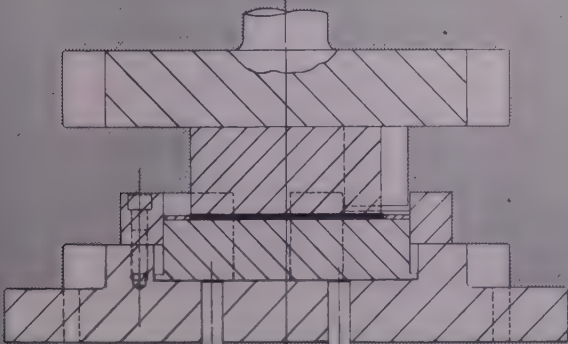
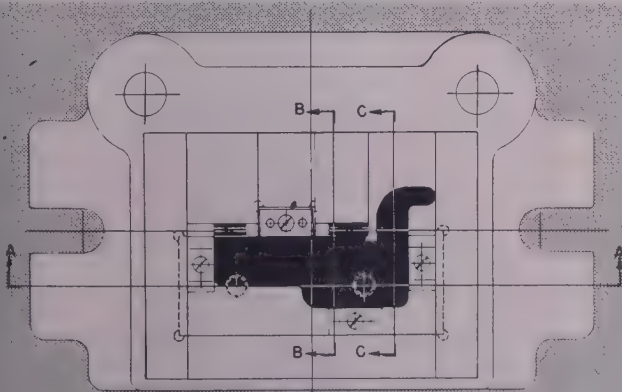
Some of the considerations involved in planning a tool are as follows:

1. Is it temporary or permanent?
2. What quality is needed? Material and workmanship.
3. What production or usage will be involved?
4. What accuracy is wanted?
5. Are quick-acting devices desirable?
6. Are special features needed?
7. Is extra strength desirable?
8. Should it be light, to handle easily?
9. Will it be handled roughly?
10. Must it be co-ordinated with other facilities?

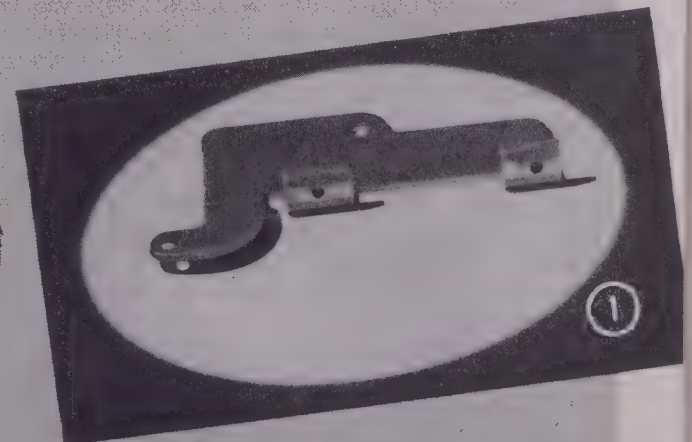
A temporary tool may require that accuracy be maintained, but quick acting and costly parts only may be sacrificed. Again, a quality tool may require

Fig. 1—View of part to be made

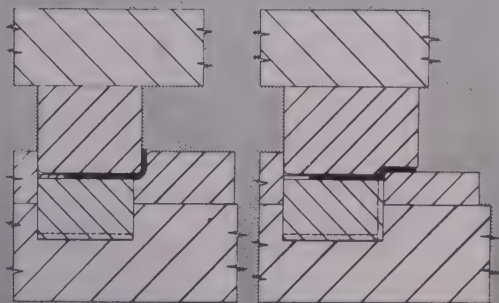
Fig. 2—Drawing of form die as submitted for approval



SECTION A A



2



SECTION B B

SECTION C C

costly high speed steels, or grinding dowel holes to a particular fit, square with part, etc., so that disassembling and reassembling do not change the accuracy. Such requirements change costs materially.

Quoting on a Tool—In quoting on a tool, all of the above factors should be taken into account, and a drawing should be made so that everybody has the same understanding of what is wanted. If this is not done, even on relatively simple items, no one will be quoting on the same thing; therefore it is not competitive, and worst of all the purchaser may get something that is not what he wanted, since the successful bidder usually had in mind a less costly tool, and got the order because of these lower costs.

In "design and build" cases the purchaser usually wants to approve the design before the tool is built. There are many reasons for this. If it is not what he wanted, and changes and additions are to be made, then the bidder expects to be further compensated for changing the design, and also the additions to the tool building cost. If the purchaser hesitates to do this, then the vendor sometimes to keep customers' good will, must lose through no fault of his own, and quality may be affected in trying to hurry. If the purchaser does allow additional costs, then the cost often runs higher than even the original highest bidder, because of the changes, etc., involved. This certainly is not fair to the other bidders, and the purchaser is not finally happy either, because of higher costs.

Sufficient analysis cannot be given to get the best design, if design work is taken competitively. The first idea is often carried through and although it may be sound, may cost more than another idea that could have been had, if sufficient analyzing could have been made. Much can be saved in the cost of building tools, if a relatively little more cost is invested in good planning and designing. Often complete tools can be eliminated as well as an operation.

In quoting on a product for which there are no drawings or definite specifications, an additional cost must be added for the unforeseen items and hazards. The experienced vendor usually again is the highest bidder and therefore often does not get the job, and when the successful bidder finds himself too low, he begins to hurry desperately; he may slight the job, often causing much delay to the purchaser, because of poor designs and tools not functioning properly.

Designing and Building—Designing and building on a bid basis is often sought by the purchaser believing it to be the best method and thinking that one party doing both jobs will give better results. It is true that more care will be exercised by the vendor since he must build what he designs, and if there are any dimensional or other errors he will have to take care of them without question.

The old saying that "You don't get something for

nothing" comes into play, however, and a tool vendor must make a profit, or he will soon cease to be in business, therefore a hazard cost must be added in design and build quotes. In this event the manufacturer may be paying for others' troubles or vice versa. This No. 1 procedure (design and build) has the greatest hazards since the most unknown is involved, consequently the greatest cost and troubles.

The following is an example of the difficulties encountered by buying tools under method No. 1, "design and build together, on a firm quotation." Fig. 1 is a view of the part to be made. Fig. 2 is a drawing of a form die as submitted for approval, while Fig. 3 is a drawing as the customer wanted the die built.

A request was received by the tool manufacturer to design and build a die to form the part from a flat blank to a part as shown in Fig. 1. This is a simple form die. No reference prints or data as to the type of die wanted was given by the customer.

In this case the customer requested in his purchase order that the design be submitted for his approval before building of the die was started. This is the best policy.

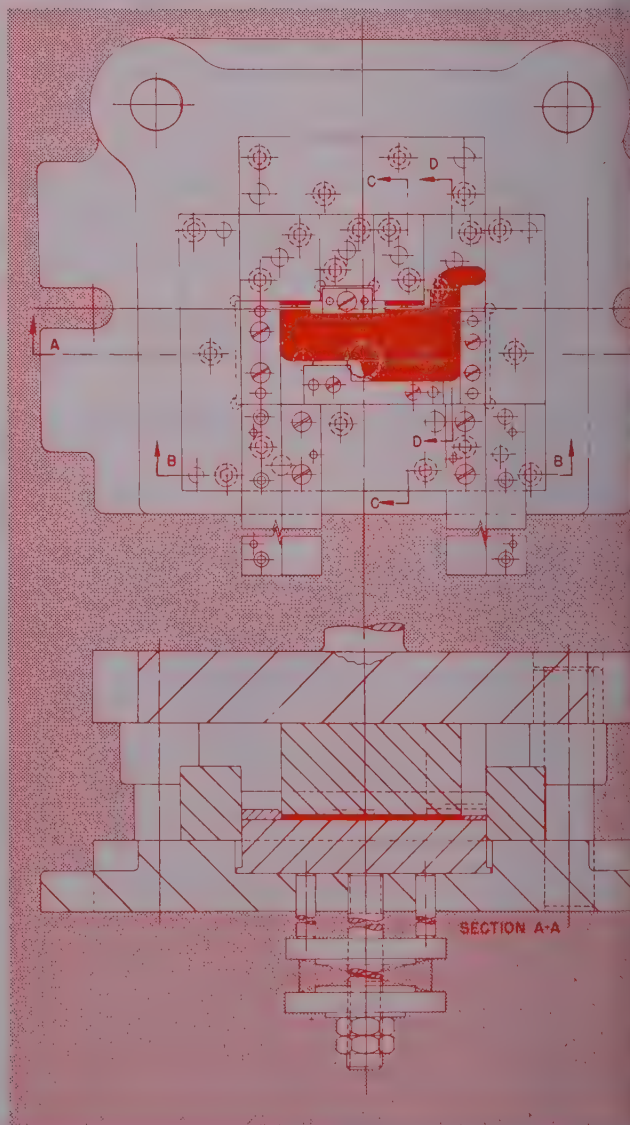


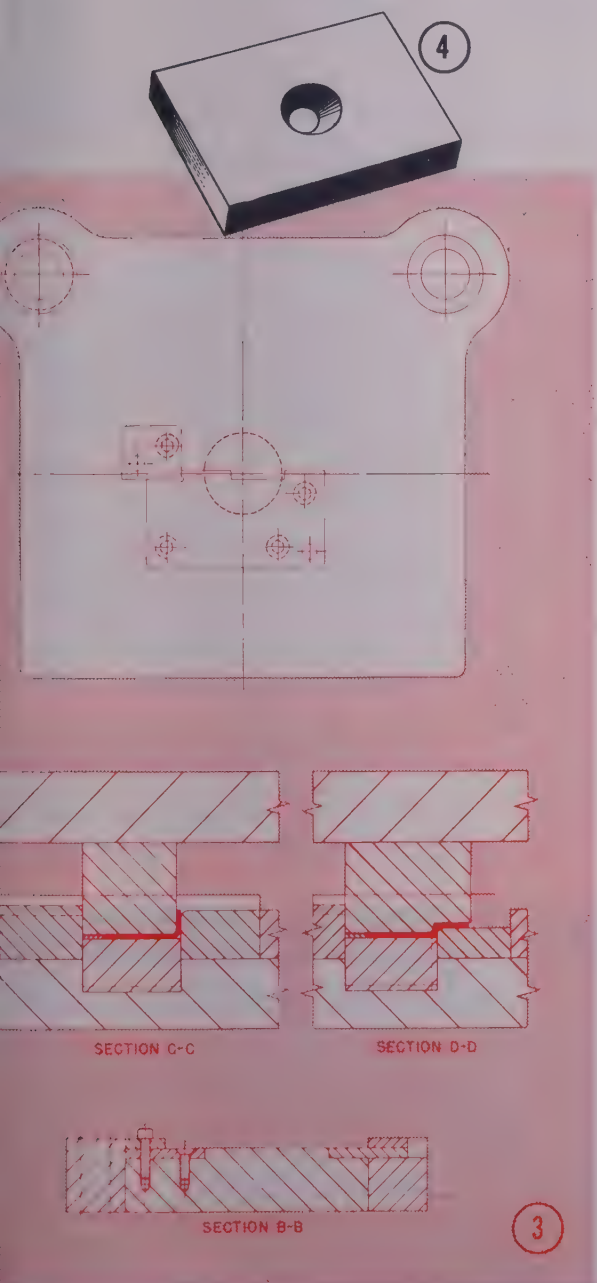
Fig. 3—Drawing of form die as customer wanted die built

Fig. 4—Finished part to be produced from die designed on a time and material basis

Fig. 2 shows the design as submitted for approval. The customer agrees that this is a good design and will properly produce the part. However, Fig. 3 shows the design as changed by the customer. These changes mainly involve items that are customary in his manufacture, some of which would have been incorporated in the original design, had reference and the proper instructions been sent with request for quotation.

Often, as in this case, costly changes to suit the customer become necessary. The design was remade, and the building cost materially increased. Needless to say, the vendor, even on this simple die, would have lost money had not a compromise been effected with the customer.

Design on a "Firm Quotation" and Quote Building from Design—The remarks above on design and build



quotes apply in the same way, except that on the building quote, which is made from the completed design, the unforeseen hazard costs are not encountered. Our experience on building tools from designs made on a quote basis proved that the designs have not been given the thought required, as more unworkable designs, errors, insufficient dimensioning and lack of information were encountered than when designed with an opportunity to analyze matters carefully. The bidder also then seeks to recover from the added costs necessarily involved.

Design, Time and Material and Quote Building from Design—Designing on a time and material basis does permit the one rendering the service to take the necessary time to be able to do a good job, analyzing to get the most practical, simplest, least costly, etc. tool, taking all of the above factors into account. The purchaser sometimes, however, pays a big price for his designs, and still did not get the quality he should have had.

This is due mostly to the way the work is handled between the parties, and also because of the selection of the one rendering the service. In engaging someone to render design service on a time and material basis, the service-purchaser is much concerned that he gets value received and is not overcharged. This will depend greatly on the selection of the party to do the work.

Rate per hour factor so much first asked about also is not the main factor in costs. Designs may be of such a nature that one tool could cost twice as much as another to build. Therefore, practicability, simplicity, and other factors make for the least cost. Hours required to design the job properly, also reflect in the cost of designing as well as the building. A properly-made drawing could easily save much in the building cost. Designing costs also vary as to skill required. Rates can be given for detailing only, design of relatively simple tools, design of complicated tools, special machinery, items involving the matter of patents, etc.

What Is Wanted?—Principles in communicating what is wanted by the purchaser, and those receiving these instructions are also important factors. Thoroughness in getting all the facts at the start is an important cost item. Those employing designing service should not only decide and approve what is wanted, after all ideas by both sides are analyzed, but they should also have their own checkers check the designs. This may seem like double checking, but our experience has proved that there are after-thoughts by the purchaser that have more than paid for this cost.

Nothing is 100 per cent perfect. No vendor can render 100 per cent perfect performance. The client is however, interested in the vendor who comes closest to this mark. The vendor should, of course, be responsible for correcting any errors in the drawings, but inasmuch as the purchaser determines what is wanted and approves same, and the rate received for such design service does not warrant any further obligation by the designers, the purchaser must assume responsibility of the tool to be built. Checking, therefore, before the tool is (*Please turn to Page 121*)

New Developments Noted in *Corrosion-Resistant* AND RARE

Salt bath chromizing, electroplating rhenium, plating tantalum, melting and casting zirconium, mechanism of passivity and inhibition in metals were among the subjects discussed at the 95th meeting of the Electrochemical Society in Philadelphia

MANY new developments in corrosion-resistant coatings, plating and metallurgy of the rare metals were discussed in papers presented at the 95th convention of the Electrochemical Society in Philadelphia, May 4 to 7. A 2-day symposium on rare metals and a scientific-technical session on luminescence were other outstanding meeting highlights.

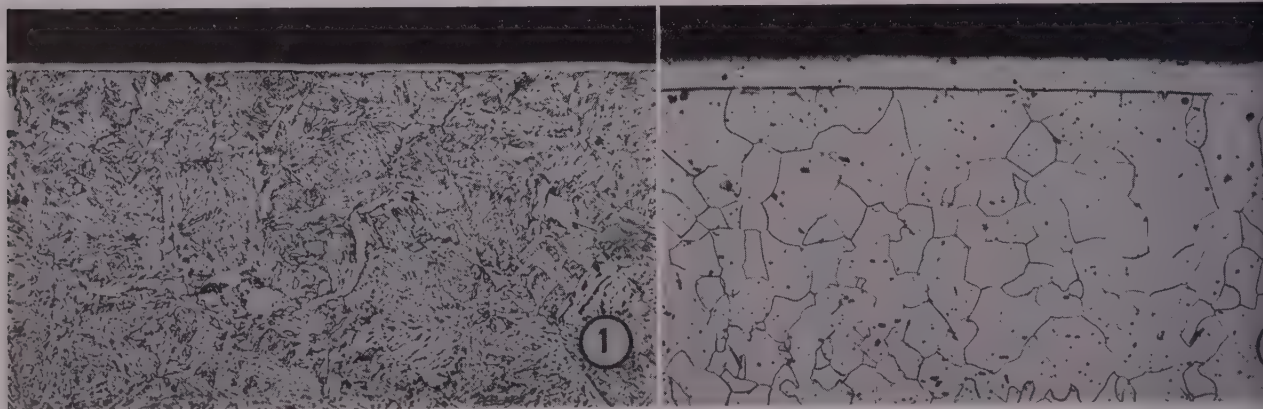
Corrosion Resistant Coatings By Salt-Bath Chromizing—Work carried out at Battelle Memorial Institute has resulted in an improved method for production of chromized corrosion-resistant surfaces on a variety of ferrous materials, according to data presented before the convention by L. E. Campbell, V. D. Barth, R. F. Hoechelman, and B. W. Gonser of Battelle.

Principal method in use at present for chromizing is the pack process in which a chromium-containing mixture is packed around parts in a tubular furnace, and the charge heated to 1300-1400° C in a hydrogen atmosphere. Variations which permit the use of lower temperature include the use of a H_2 -HCl atmosphere, with a charge of chromium metal or ferrochromium, and the use of a chromous chloride-impregnated ceramic pack in an inert or reducing atmosphere. It was pointed out in the Battelle work that a much more flexible process is the salt-bath method. In this process, chromizing is obtained by

simply immersing the work in fused salt containing chromous chloride.

In the chromizing of steel, chromous chloride reacts with iron to form a chromium-iron alloy at the surface. The surface of a chromized part, as ordinarily prepared is never pure chromium, but is of the order of 40 to 70 per cent chromium. The concentration gradient beneath the surface drops to about 13 per cent at the interface between the case and base metal. Resistance of chromium and chromium-containing alloys to corrosion under oxidizing conditions is well known. The maximum temperature for stability in air, for example, increases from about 500°C for iron, to about 900°C for chromium, and up to 1050-1100°C for a 25-30 per cent chromium steel. It was pointed out by the Battelle workers that since only the surface of a corrosion-resistant alloy is effective in opposing destructive attack, there are many instances in which ordinary iron or steels having a protective high-chromium alloy surface are as satisfactory, from a performance standpoint, as a continuous "stainless steel" structure.

Advantages cited for the salt bath method of chromizing include such factors as greater latitude in chromous chloride concentration during treatment, elimination of packing and unloading operations and furnace heating and cooling, and the possibility of



Coatings ETALS

chromizing, simultaneously, articles requiring different periods of treatment. It was pointed out that rate of chromized case formation in the salt bath method is dependent upon two processes: An exchange reaction, whereby chromous chloride reacts with iron to form a chromium-iron alloy and ferrous chloride, and the interdiffusion of chromium and iron. In salt-bath chromizing with a high chromous-ion activity, the limiting factor is the diffusion process; the exchange process can, for practical purposes, be assumed to be instantaneous. Furthermore, since the diffusion rate is an exponential function of the temperature, the rate of case formation increases rapidly with a small temperature increase.

Salt-Bath Chromizing—The experimental furnace used in salt-bath chromizing at Battelle is shown in Fig. 4. Essentially the furnace consists of a heated crucible with provisions for manipulation of specimens and maintenance of predetermined temperatures and atmospheres. Several runs were also made in an externally heated, type P, Ajax electric salt-bath furnace, with a 15-kw, 220-v, 72-amp rating. This furnace was equipped with a ceramic pot, 10 inches in diameter and 15 inches deep. A stainless steel and brick cover was built over the top to retain an atmosphere over the bath.

Primary salt-bath composition used in a majority of runs consisted of the following mixture: 30 per cent CrCl_2 , 49 per cent BaCl_2 , 21 per cent NaCl ; sufficient chromium flake to cover to the crucible bottom. An argon atmosphere was provided to shield the bath against air. The experimental work included determinations of comparative case formation in the above bath, and variations were made in both the bath composition and atmosphere. Some work on pack chromizing was also carried out to provide a basis for comparison with the salt-bath method.

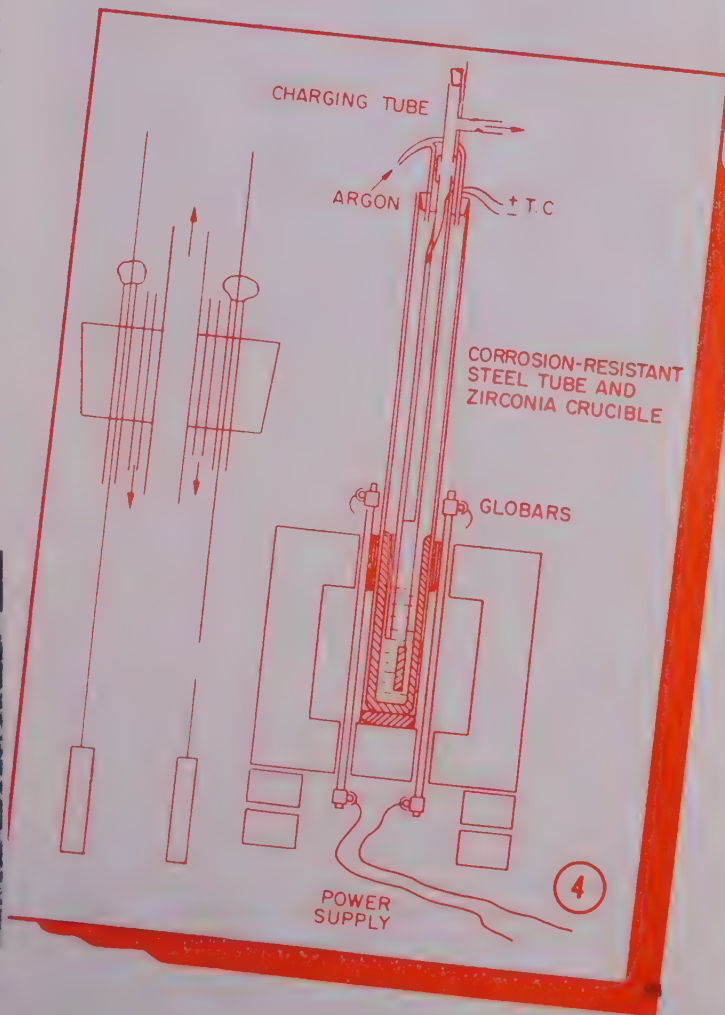
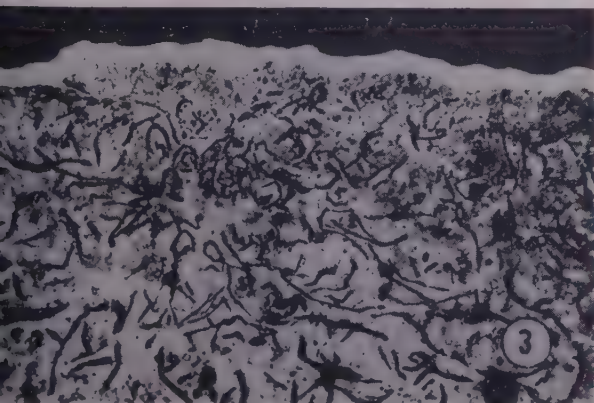
Materials Chromized—Metals and alloys chromized in the small experimental furnace are listed in Table I. Rate of case formation on Armco iron are shown in Fig. 1. Results of runs made in the larger Ajax internally heated furnace were stated to be similar to those covered in Table I. In general, the case thicknesses on the steels in Table I were less than for iron, as is illustrated in Figs. 1 and 2; the steel cases varied from 0.6 mil to 1.2 mils in 3 hours with the exception of the steel designated as "IK". This latter steel, of a type used in German practice for chromizing, accumulated a 2.3-mil case during the same time and temperature. It is reported that in German "IK" type steel it has been the practice to hold the carbon content down and/or to stabilize it with titanium or some other strong carbide former. In general, it was pointed out by the Battelle work-

Fig. 1—SAE 4120 steel, chromized for 2 hours at 1100°C . 100X, nital etch

Fig. 2—Iron chromized for $2\frac{1}{2}$ hours at 1000°C . 100X, nital etch

Fig. 3—Cast iron, salt bath chromized for 3 hours at 1035°C (1900°F). Case thickness: 0.0009-in. 100X, picral etch

Fig. 4—Furnace used in salt bath chromizing work



ers that the presence of carbon sharply restricts the rate of case growth, which is illustrated in Figs. 2 and 3.

It was reported that in a number of runs cast iron was found to chromize without difficulty, a uniform corrosion-resistant one-mil case being formed in 3 hours at 1035° C. The effect of excessive carbon is partially offset in the case of cast iron by its lower melting point. A typical cast iron chromized part examined metallographically, is shown in Fig. 3.

The Battelle workers reported that none of the chromized parts listed in Table I failed to pass the nitric acid test. This test consisted of immersion of the specimens in a 1:2 concentrated nitric acid, water solution at room temperature. Specimens having continuous cases were unaffected in a 3 to 4-month test period. Those having slight porosity or excessively thin cases failed within a few hours. It was reported that continuous cases as thin as 0.2 mil held up over tests of several months duration.

Comparisons of cases formed in the salt bath with those formed by the pack method are shown in Table II. It was also pointed out that from the standpoint of costs, the salt-bath method compared favorably with the other chromizing process. The bath can be operated in a more or less continuous manner so that packing, furnace heating, furnace cooling and unloading cycles are avoided. Operation at lower temperatures for shorter times is possible, and in addition, it was stated that many of the inherent advantages of heat treating salt baths carry over to the chromizing bath. A principal advantage cited is the greater range of CrCl_2 concentration.

Another general point of interest which was pointed out is that the effectiveness of the fused-salt chromizing is dependent to a considerable extent, as in other chromizing methods, on the choice of material. Although corrosion protective cases will form on a wide variety of materials, deeper penetration at lower temperatures requires the selection of lower carbon steels. It was stated that silicon appears to increase the diffusion rate, but the specific effects of other elements, alone or in combination, are not well known.

Electroplating Rhenium—One of the first papers presented in the symposium on the rare metals featured a discussion on rhenium plating based on work conducted at the University of Wisconsin by L. E. Netherton and M. L. Holt. The experimenters reported that there appears to be no difficulty in electroplating bright metallic deposits of rhenium from various types of aqueous plating baths. However, cathode efficiencies in all baths were quite low, and were reported to change considerably with bath concentration and electrolysis conditions.

Electrodeposited rhenium was described as having a silvery metallic appearance, but was reported to tarnish somewhat on standing, particularly in moist air. Rhenium metal gives no apparent reaction with hydrochloric acid and little if any reaction with sulphuric acid. Hardness of the metal was reported to be approximately 250 Brinell. According to Netherton and Holt, preliminary work on rhenium plating indicated that the sulphuric acid bath and two new baths, a citric acid bath and an ammoniacal citric bath were

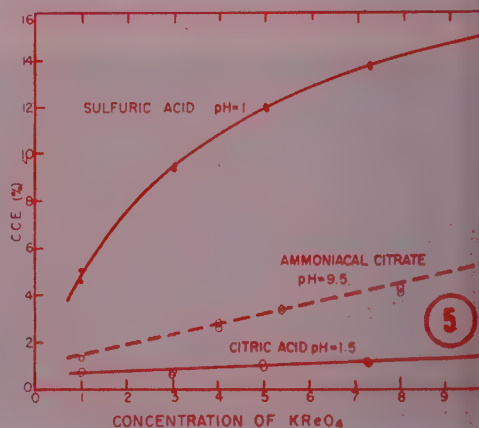
among the most satisfactory, and the work carried out was limited largely to these systems. However for the sake of completeness, the cathode efficiencies of other proposed aqueous baths were determined. A modified sulphuric acid-type bath has been used for rhenium plating on brass.

Based on data presented by Netherton and Holt probably the most satisfactory bath so far reported for electroplating rhenium is the sulphuric acid-type bath. It was reported that when this bath contains 10 g/L of KReO_4 and sulphuric acid to give a pH of about one, it yields bright metallic deposits. Using a cathode current density of 8 amp per sq dm (about 75-80 amp per sq ft), and a bath temperature of 70°C the cathode current efficiency was reported to be about 15 per cent. Other data showed that when this bath contains only 1 g/L KReO_4 , the cathode current efficiency at the same condition is only 5 per cent. The sulphuric acid-type plating bath was found to be particularly sensitive to pH changes.

The ammoniacal citrate bath was found to be the best of the other plating baths studied. Although the cathode current efficiency with this bath is quite low, in applications where it is necessary to conserve rhenium salts, and where only a thin plate is desired it may be a useful bath. It was reported that the cathode deposits obtained from both types of baths were bright and metallic in appearance.

Holt and Netherton also pointed out that in studies carried out to determine the effect of KReO_4 concentration on the cathode efficiency, the amount of KReO_4 in each bath was varied from 1 to 10 g/L. The sulphuric acid bath contained enough H_2SO_4 to give a bath pH of one; the citric acid bath contained 50 g/L of citric acid at a pH of 1.5; the ammoniacal citrate bath contained 50 g/L of citric acid and NH_4OH to give a pH of about 9.5. The temperature of each bath was 70°C; cathode current density was 8 amp per sq dm; the time of each electrolysis run was 15 minutes.

A cathode current density of 8 amp per sq dm (about 75-80 amp per sq ft) was used because preliminary results with the Hull plating test cell showed that this current density gave bright plates with all of the baths. The results of the tests, shown graphically in Fig. 5, indicate that the KReO_4 concentra-



on of the plating bath has a marked effect on the cathode current efficiency of all three baths; also, shown is the fact that the sulphuric acid-type bath has the highest current efficiency.

A similar study was made to determine the effect of bath temperatures on the cathode current efficiency, wherein the bath temperatures were varied from 25 to 90°C. The results brought out the fact that for each bath the cathode current efficiency increases with increasing bath temperature, reaching a maximum at the highest bath temperature.

Tantalum Plating—In another paper from the University of Wisconsin Laboratories, M. L. Holt and co-worker, H. J. Seim, presented a critical review of the various methods for plating of tantalum that have been reported in the literature. According to the authors, the successful electrodeposition of tantalum, particularly from an aqueous solution, would be considered a major accomplishment and tantalum plating would probably rank with chromium plating in importance. The properties of tantalum, especially its resistance to most chemical reagents, make it an important and rather unique metal. Holt and Seim found that they were unable to plate tantalum from any of the baths described in the literature. Attempts to plate tantalum and tantalum alloys from numerous other aqueous and nonaqueous solutions were also unsuccessful.

Zirconium Metal—One of the high lights of the rare metal symposium was a paper by W. J. Kroll and H. L. Gilbert on the melting and casting of zirconium metal, based on work carried out at the Bureau of Mines, Albany, Oreg. For the experiments described, a high-frequency furnace, an arc furnace, and a split-tube graphite resistor furnace were investigated. The melting and casting of zirconium, it was pointed out, presents many difficulties owing to the high melting point and chemical activity of the metal; in this respect, it resembles titanium.

It was brought out by Kroll and Gilbert that the discovery made at the Albany station of the U. S. Bureau of Mines, two years ago, that titanium, zirconium, thorium, and probably hafnium may be melt-

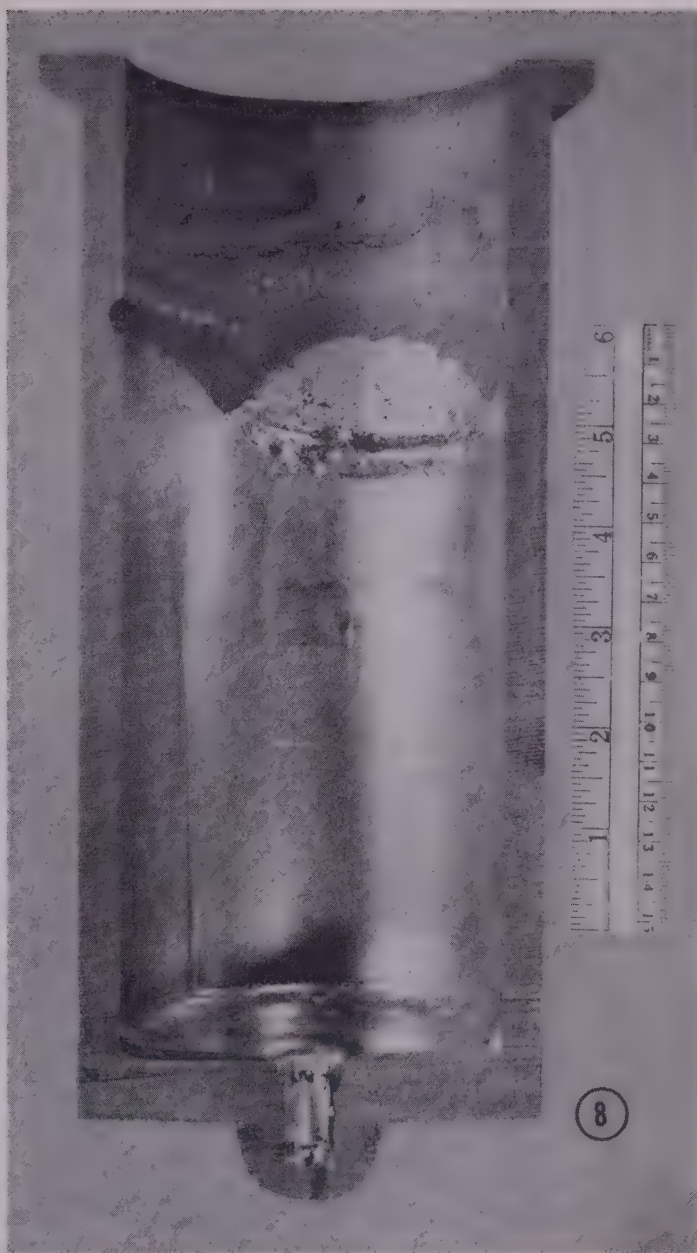
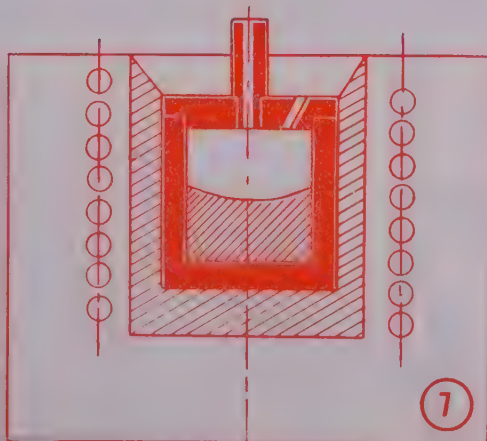
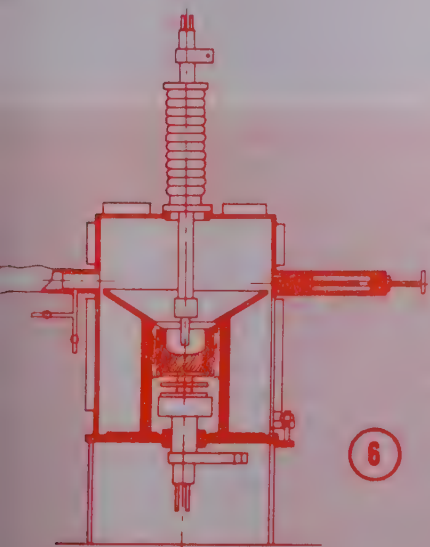


Fig. 5—Graphical representation by Netherton and Holt of the cathode current efficiency (CCE) in rhenium plating as a function of the concentration of $KReO_4$

Fig. 6—Direct current arc furnace suitable for melting zirconium

Fig. 7 — High-frequency arrangement for melting zirconium

Fig. 8—Graphite crucible after 15 zirconium melts, showing barely any corrosion



ed satisfactorily in gas-free graphite was of considerable importance, in view of the fact that it at once opened the road for melting large quantities of metal. It was stated that a small amount of carbon is actually beneficial for many applications of these metals. Zirconium when melted in graphite was reported to pick up between 0.15 and 0.25 per cent carbon.

However, it was emphasized that the type of graphite used is important. Commercial electrode graphite was described as being porous and quite easily penetrated by the highly fluid molten metals which wet the graphite. Carefully machined crucibles of grade AUF or AUC graphite were recommended. The latter grade was stated to be quite gas-free and may be used without degassing.

The arc furnace, high-frequency furnace and several split-tube graphite resistor furnaces were studied for melting and casting zirconium, in the Bureau of Mines' work. Each of these types has advantages and disadvantages, and many different requirements are met in their use. No definite conclusions were drawn by the experimenters regarding the choice of one type over the other. Factors influencing the choice of a furnace are: Permissible contamination, size and shape of the ingot, cost of the melting operation, and cost of equipment involved.

Construction of a direct-current arc furnace suitable for melting zirconium is shown in Fig. 6. The water-cooled, tungsten-tipped electrode can be moved in any direction, both horizontally and vertically, by means of the flexible metal tubing by which it is introduced. The somewhat violent expansion and contraction of the inert atmosphere, when striking the arc, are taken care of with the automobile tire inner tube attached. A funnel of molybdenum sheet delivers compressed zirconium briquets from a side arm feeding device to the thin graphite crucible. This crucible, it was pointed out, is thermally insulated from the water-cooled copper anode block by graphite radiation baffles, and the whole assembly is packed in tungsten wool to prevent radiation laterally to the furnace shell.

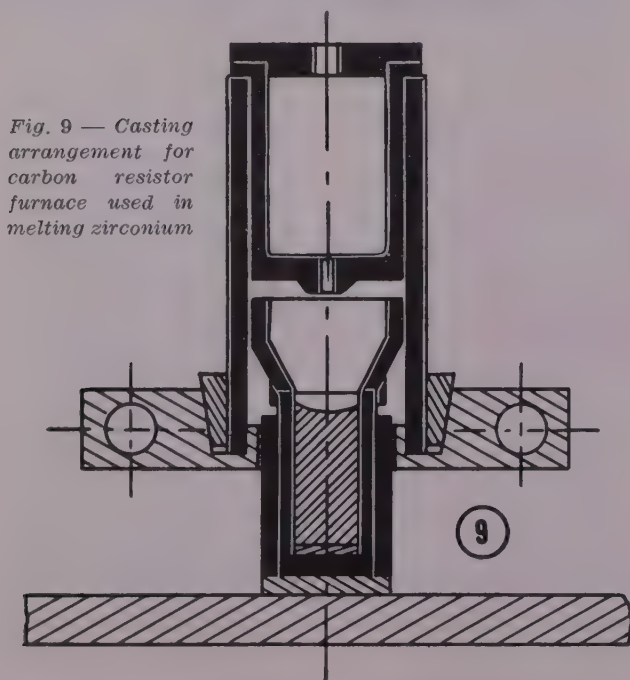


Fig. 9 — Casting arrangement for carbon resistor furnace used in melting zirconium

With an input of 600-800 amp, it was stated that 5 pounds of metal could be melted in about 3 minutes. The ingots produced are usually well fused and homogeneous and contain only a trace of tungsten and 0.02 to 0.07 per cent carbon. The carbon pickup is small because of the rapidity of the fusion process. It was brought out by Kroll and Gilbert that there is no question but that this furnace could easily be improved to produce large ingots with low carbon and tungsten contamination.

High-Frequency Melting—What was described by Kroll and Gilbert as a very simple method of melting in a high-frequency furnace is illustrated in Fig. 7. A graphite crucible is placed in an ordinary high-frequency furnace and packed with lampblack for insulation. A tight fitting cover and graphite plumbing maintain a slight flow of pure helium or argon into the crucible. The charge of 16 to 20 pounds was reportedly melted in about 20 minutes with an input of less than 40 kw after which it is allowed to cool in the crucible. Although, as the authors explained, this method involves the loss of a crucible for each melt, it makes possible the easy melting of zirconium (and titanium) in any commercial high-frequency furnace.

Casting ingots by this method requires bottom tapping by use of an auxiliary high-frequency coil, a resistor heater, or an arc "stinger". As the mold also has to be purged with helium, the high-frequency coil, crucible, and mold must be placed inside a steel shell where the atmosphere can be closely controlled.

Split-Tube Carbon Resistor Furnace—It was reported that this successful and relatively cheap method of melting is used for all zirconium produced at the Albany, Oreg., station of the Bureau of Mines. Although the single-phase split-tube graphite resistor furnace has been used, it was stated that a three-phase model of this furnace has been found quite successful and offers several advantages. Most important of these are the introduction of more power with a given size of bus bar and a stirring effect in the crucible which aids considerably in preparing alloys. If wanted, this type of furnace operates under helium as well as in a vacuum.

Casting of ingots by the bottom plug method is particularly easy in the graphite-resistor furnace, since the bottom of the crucible is cooler because it is close to the water-cooled clamp. The plug, therefore, melts last. It has been found that a certain length of crucible will permit the plug to remain in place until the charge is completely melted. The plug then melts out, automatically, and the molten charge runs into the mold below. A funnel is used to keep splashing metal from getting out into the furnace. The mold is slightly tapered and has a thin graphite dish in the bottom of which the metal stream impacts. When the ingot is knocked out of the mold, this dish, to which it is welded, comes with it. The arrangement of the furnace is shown in Fig. 9.

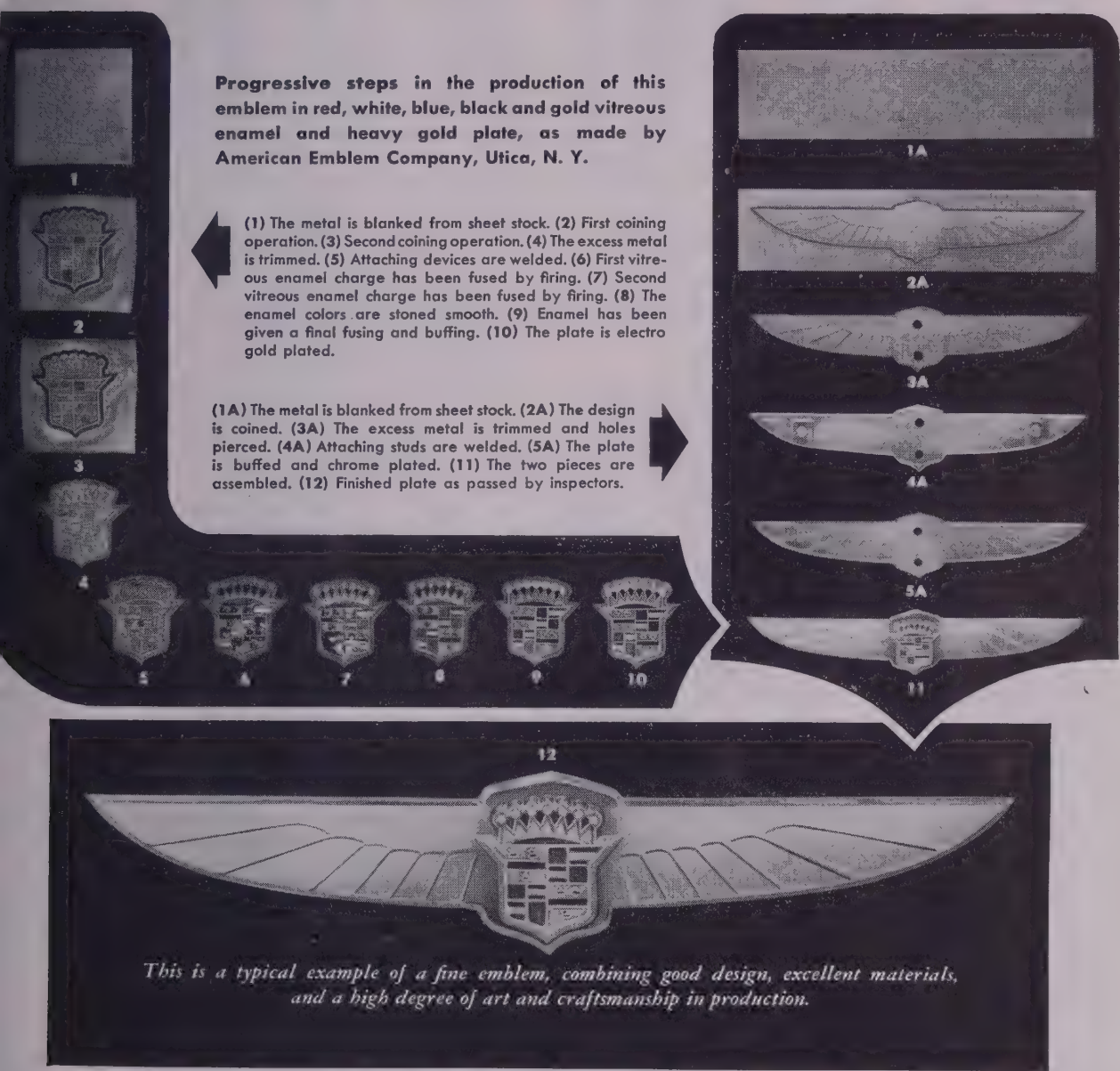
To recondition the crucible, it is necessary to saw off the button which remains on the pouring tip from the previous run to assure an undeflected stream on the next run. The mold must be reamed to remove a thin film of adhering zirconium which apparently forms there by evaporation. Crucibles can be used 15

How the base metal protects the finish

Progressive steps in the production of this emblem in red, white, blue, black and gold vitreous enamel and heavy gold plate, as made by American Emblem Company, Utica, N. Y.

(1) The metal is blanked from sheet stock. (2) First coining operation. (3) Second coining operation. (4) The excess metal is trimmed. (5) Attaching devices are welded. (6) First vitreous enamel charge has been fused by firing. (7) Second vitreous enamel charge has been fused by firing. (8) The enamel colors are stoned smooth. (9) Enamel has been given a final fusing and buffing. (10) The plate is electro gold plated.

(1A) The metal is blanked from sheet stock. (2A) The design is coined. (3A) The excess metal is trimmed and holes pierced. (4A) Attaching studs are welded. (5A) The plate is buffed and chrome plated. (11) The two pieces are assembled. (12) Finished plate as passed by inspectors.



It is almost always the case, though unsuspected by the general public, that the material to which a finish is applied has a definite influence upon the perfection and durability of that finish. For example, products that are nickel or chromium plated stand much better if the base metal is non-rusting, as is copper and brass. To take another example, look at vitreous-enamelled emblems, used as trademarks, name plates, medals, lapel pins, insignia, and so on. Most of these emblems have a copper alloy as the base metal; only that, or gold or silver, can be used. These emblems owe their beautiful

and permanent colors to silicate pastes and powders, inlaid by skilled artisans, and twice fused in a furnace at a temperature of about 1500° F. This temperature sets high standards for the underlying metal which must not warp, nor "bubble up" into the enamel. Thus visible beauty for which so much creative skill is required, depends in part on the invisible metal underneath. Revere, which takes great pains to maintain the strict standards of its alloys, is proud to meet the high requirements of American Emblem and other companies in this field . . . Perhaps Revere can help you by supplying exactly what you require to protect

the finish and durability of your product.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

• • •

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.

Sales Offices in Principal Cities, Distributors Everywhere.

TABLE I
MATERIALS CHROMIZED

	Shape	Chromizing Temperature
Armco iron	$\frac{3}{8}$ "-diam. rod	900°, 1000°, 1100°, 1200° C.
Armco iron	$\frac{1}{8}$ " sheet	1000° C.
1. S.A.E. 1015 steel	$\frac{1}{4}$ " x $\frac{1}{4}$ " bar	1100° C.
2. S.A.E. 1045 steel	$\frac{1}{4}$ " x $\frac{1}{4}$ " bar	1100° C.
3. S.A.E. 2315 steel	$\frac{1}{4}$ " x $\frac{1}{4}$ " bar	1100° C.
4. S.A.E. 3140 steel	$\frac{1}{4}$ " x $\frac{1}{4}$ " bar	1100° C.
5. S.A.E. 4120 steel	$\frac{1}{4}$ " x $\frac{1}{4}$ " bar	1100° C.
6. S.A.E. 4130 steel	$\frac{1}{4}$ " x $\frac{1}{4}$ " bar	1100° C.
7. S.A.E. 5115 steel	$\frac{1}{4}$ " x $\frac{1}{4}$ " bar	1100° C.
8. 2.0% Mn, 0.15% C, 0.8% Si steel	$\frac{3}{8}$ "-diam. rod	1100° C.
9. 1.5% Mn, 0.08% C, 0.4% Si 0.64% Ti "IK" type steel	$\frac{1}{4}$ " x $\frac{1}{4}$ " bar	1100° C.
10. 18-8 type 347 stainless steel	$\frac{3}{8}$ "-diam. rod	1200° C.
11. 3.3% C, 1.7% Si, 0.8% Mn cast iron	$\frac{3}{8}$ "-diam. rod	1035° C.
12. 3.4% C, 1.9% Si, 0.8% Mn cast iron*	$\frac{3}{8}$ "-diam. rod	1035° C.
13. Nickel	$\frac{1}{4}$ "-diam. rod	1200° C.
14. Molybdenum	$\frac{3}{8}$ "-diam. rod	1200° C.
15. Tungsten	$\frac{1}{8}$ "-diam. rod	1200° C.

* Partially decarburized to depth of 8 mils.

TABLE II
COMPARISON OF CASE THICKNESSES BY
PACK AND BY SALT-BATH METHODS

Ferrous Material	Pack Method 6 Hrs. at 1000° C.	Salt-Bath Method at Indicated Time and Temperature
1. Armco iron	0.7 mil	2.0 mils 6 hrs. at 1000° C.
2. Cast iron	0.6 mil	0.9 mil 3 hrs. at 1035° C.
3. S.A.E. 1045	0.5 mil	1.1 mils 6 hrs. at 1100° C.
4. S.A.E. 2315	0.4 mil	1.2 mils 6 hrs. at 1100° C.
5. S.A.E. 3140	0.6 mil	1.2 mils 6 hrs. at 1100° C.

to 20 times, but the mold life at present is only about three runs. The crucible loses graphite to each charge and gradually becomes thin, as shown in Fig. 8.

Usual carbon content of castings is from 0.07-0.11 per cent. In vacuum, the single-phase carbon resistor furnace melts 15 pounds of zirconium in 20 minutes with an average power input of 55 kw, which represents an energy consumption of 1.22 kwh per pound. It was pointed out by Kroll and Gilbert that the choice as to which furnace is best depends entirely upon the amount of gas to be tolerated in the zirconium ingot.

Passivity and Inhibition in Metals—Several papers on corrosion processes and mechanisms thereof were features at the general session of the convention. In a paper by R. B. Mears, Carnegie-Illinois Steel Corp., Pittsburgh, a unified mechanism of passivity based on the behavior of local elements in metal surfaces was developed. The mechanism proposed was

based on a knowledge of the electrochemical behavior of local cells. It was pointed out that reduction of corrosion rate can be achieved by (a) reduction in open circuit potential differences between the local anodes and cathodes, (b) increased polarization of the local anodes and cathodes, (c) increased polarization of the local cathodes, and (d) a combination of these factors.

According to Mears, the corrosion of all metals in alloys in liquid medium, at least, is generally assumed to be an electrochemical phenomenon. That is, the corrosion is associated with the flow of electric currents over finite distances. Although it is true that a quantitative relationship between current flow and corrosion loss has been established only in a few special cases, there is much qualitative evidence to support an electrochemical mechanism.

In the recent past, it was noted, theories of passivity have been proposed which attribute this phenomenon to (a) solid films, especially oxide films, (b) gaseous films, especially oxygen or hydrogen, and (c) electron configuration. The latter theory applies only to the transition elements. The gaseous film theory applies only to a limited number of specific cases. Thus far, as brought out by Mears, the solid film theory has had the widest applicability.

Corrosion Resistance of Stainless—In a paper from the Scientific Research Institute Ltd., Komagom Bunkyo-ku, Tokyo, Japan, electron diffraction studies on the structure of the surface of stainless steels were discussed. According to the experimenter Yamaguchi, Nakayama, and Katsurai, at the institute a film having sufficient thickness from electron diffraction studies was prepared by subjecting the specimen of stainless steel to high temperature steam in an autoclave. The electron diffraction experiments indicated that the solid solution (Ni, Fe CrO₄), is formed on the surface of the stainless steel. It was pointed out that this solid solution could protect the substrate without spalling, since the film is bound with the metal through the residual valence electrons, and the atomic spacing along the c-axis of the former crystal is nearly the same as that along the cube edge of the stainless steel crystal.

Manual Presents Data on Electrical Steel Sheets

Summarization of characteristic properties of USS electrical steel sheets is presented in curve and tabular form in a new 180-page illustrated engineering manual No. 3, offered by Carnegie-Illinois Steel Corp., 2087 Carnegie Bldg., Pittsburgh 30, Pa. It was compiled for use by those concerned with the application and use of the sheets in rotating machines, transformers and other forms of electrical devices requiring laminated core materials.

The contents include: Characteristic curves of principal grades; incremental permeability characteristic curves at low alternating-current

flux densities; general engineering data applying to electrical sheets and other steel products; nontechnical description of the production, testing and uses of electrical sheets.

New Technique Used To Coat Large Metal Surfaces

Aluminum surfaces and assemblies, too large to be conveniently handled through dipping or spraying operations, now can be provided with smooth, skin-like protective coatings equal in performance to those provided by electrolytic processes.

The simple method, developed recently by American Chemical Paint Co., Ambler, Pa., involves the use of Alodine solutions, and consists of ap-

plying by brush two coating chemicals previously diluted in several parts of water directly to the clean aluminum surfaces, then rinsing. Brushed on the parts evenly and liberally, the prepared solution is allowed to act on the metal for a minimum of 1 minute but not longer than 5 minutes, then rinsed off before drying.

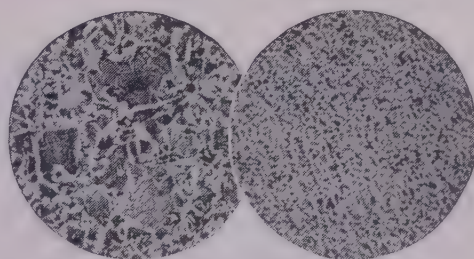
Coatings produced by the method differ somewhat from those produced by dipping or spraying, according to the company. Although they are inferior because of the thinness of the film, they lack the green color of regular Alodine coatings. Tests also indicate that the new method is almost as effective in protecting aluminum parts as the dip treatment.

YOU CAN DEPEND ON

VANADIUM

to give you grain size control, high performance, and ease of processing

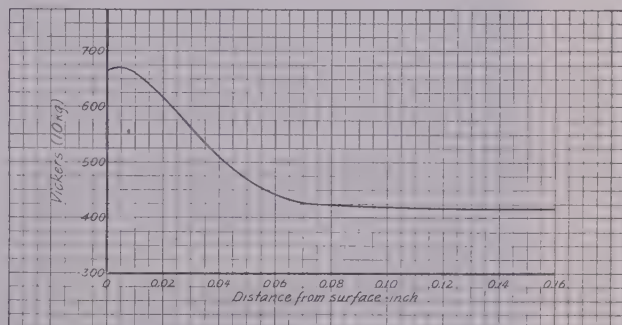
GRAIN SIZE is refined by the addition of vanadium, the balance between strength and toughness is improved, and greater uniformity is promoted between transverse and longitudinal properties.



0.34 C

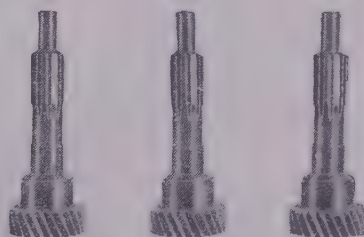
0.34 C, 0.20 V

HIGH PERFORMANCE follows the use of vanadium in constructional steels. In carburized parts, for example, the well-integrated bonding between case and core, inherent in vanadium carburizing steels, assures excellent shock-resisting properties and maximum service life.



Hardness penetration graph of Chromium-Vanadium A 6120 steel, with a light case (0.80-0.85% carbon) in outer .010 inch

EASE OF PROCESSING—Uniformity of vanadium steels from heat to heat, with easy and uniform response to thermal and mechanical treatments, brings large compensation—savings far over-shadowing differences in initial materials costs.



Our metallurgists will be glad to assist you in the application of vanadium to meet your requirements.

MAKERS OF
FERRO-ALLOYS



CHEMICALS
AND METALS

VANADIUM CORPORATION OF AMERICA

420 LEXINGTON AVENUE, NEW YORK 17, N. Y. • DETROIT • CHICAGO • CLEVELAND • PITTSBURGH

Hydraulic Presses

Speed Electric Motor Assembly

ACCURATE positioning of the commutator on the shaft with respect to motor armature laminations, formerly requiring two or three press operations, now is performed in a single press operation by an operator holding a guiding template in one hand, and the operating lever of the hydraulic press in the other. This is but one of the operations requiring precision control of compression loads up to 40 tons in the building of traction motor armatures at Westing-

house Electric Corp., East Pittsburgh, Pa. Baldwin type T-10 hydraulic presses of 75 ton capacity are used.

Two of these presses are employed in the armature core-building section to press armature laminations and commutators on the shafts. Armatures are used in motors having capacities ranging from fractional horsepower Y-type blower motors to trolley coach motors of 140 hp. Compression loads of 18 to 30 tons are re-

quired to these jobs on two of the presses.

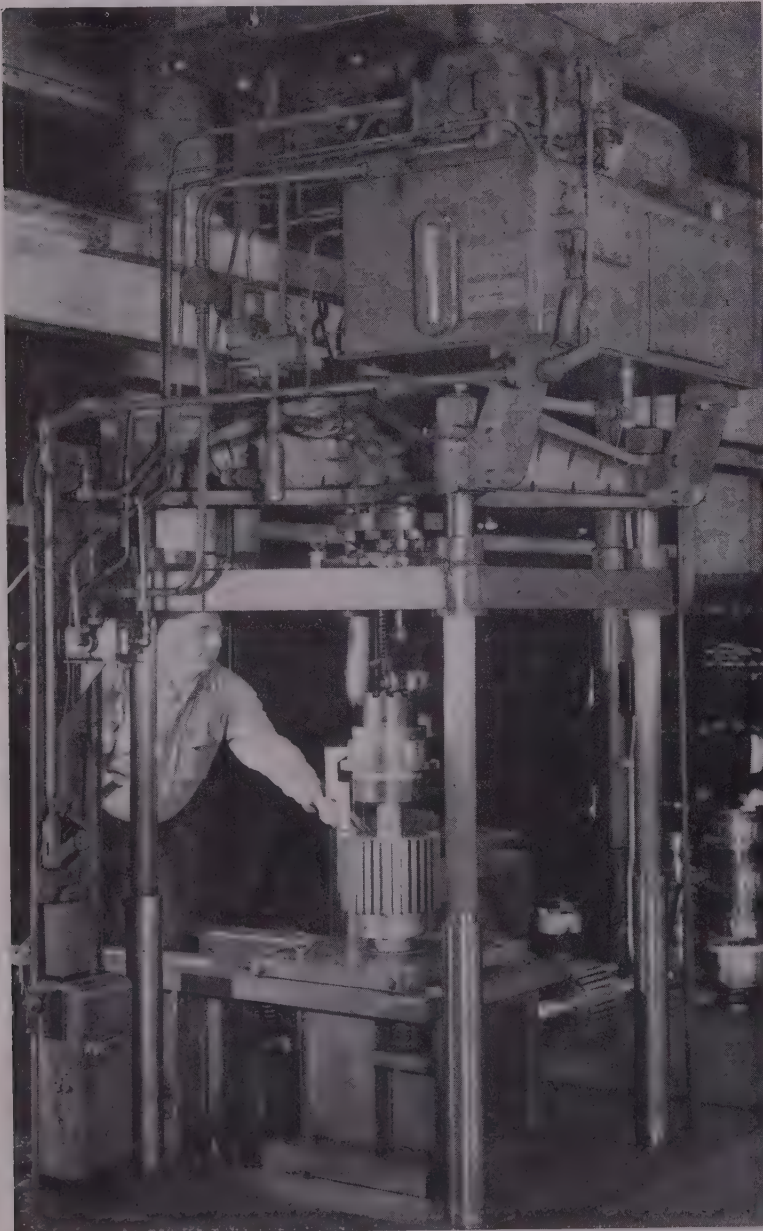
Operating lever controls speed of ram movement in either direction and rate of application of load. Excessive loads are prevented and controlling of the load during press operation as required for the assembling operation is permitted by means of a pressure valve and gage on the front of the machine which may be preset for maximum loads.

Tightening of commutators after assembly on the armature shaft requires the services of the other two Baldwin presses. Commutators are tightened twice, following each of the two dips in the insulating and protective varnish and subsequent baking periods of 8 and 16 hours. The operation consists of applying sufficient pressure to minimize binding on the threads of a nut by which the commutator is tightened. While proper tonnage is applied on the commutator V-ring, a steel bar is used as a lever to tighten this nut.

Armature tightening operations are handled by two men, one operating the press and the other an overhead crane which moves armatures from oven to press and from press to nearby temporary storage area. Handling of armatures into and out of the press is facilitated by a specially designed rolling base plate and table. This plate has a 30-inch travel out from under the hydraulic ram, permitting the crane to deposit and pick up armatures on the center of the base plate without manual handling. The table may be turned to feed the press from any of its four sides.

Press has ample working area at convenient height for the large armature of the type made by Westinghouse for operator access to the work. Columns are 37 inches apart in the working area and the ram has a 30-inch stroke. The available height of the working space under the ram is 5 feet.

Operator preparing to press a commutator on an armature core of a 140 hp trolley coach motor. Positioning is accomplished by means of a guiding template held by the operator and the single press control lever



**On your jobs...in your plant
WE WILL PROVE THIS—**

Under today's conditions there are many operations on which Ingersoll-Rand Air Power equipment saves enough to pay for itself in a matter of days.

On automobile production job

PAID FOR ITSELF—IN 10 DAYS

On fabricating job

PAID FOR ITSELF—IN 15 DAYS

On meter assembly job

SAVED \$20,800 IN FIRST YEAR

These examples show the time in which typical I-R AIR POWER EQUIPMENT paid for itself in actual use because AIR TOOLS enable the workman to produce more with less effort.

At no cost to you, I-R field engineers will make a job study with actual Air Tool performance tests on your own operations in your own plant. You can use the equipment yourself, try it in any way you like, keep your own time and cost records. Then you will know how much it can save you and how soon it will pay for itself on your jobs. To have this job study made in your plant, call your I-R branch office now.

Similar studies in many plants have proven this important fact: Ingersoll-Rand Air Power equipment which, a few years ago, saved enough to pay for itself in 30 days, now pays for itself in only 18 days on the same operations under today's conditions.



Ingersoll-Rand

11 Broadway, New York 4, N. Y.

Fig. 1—View from rear showing hydraulic pumps for operation of drawbench carriages

Continuous ROD DRAWING, STRAIGHTENING, POLISHING

By DAN REEBEL
Associate Editor, STEEL

... performed at high-speed on both ferrous and nonferrous stock

CONTINUOUS drawing, straightening, cutting to length and polishing of steel, brass, copper and other nonferrous rods of round, hexagon, square or rectangular sections direct from the coiled stock at the rate of 150 feet per minute for a 1-inch and 200 feet per minute for a $\frac{3}{4}$ -inch diameter material is today being performed on equipment designed and built in two sizes by Loma Machine Mfg. Co. Inc., New York.

Various units comprising this up-to-date high-speed production line are as follows: An uncoiler, a preliminary straightener, a drawbench, a profile straightener, a shear for cutting to length, a straightening and polishing machine for round stock, and the final discharge table. These components which are interlocked electrically and mechanically provide continuous automatic operation affording a production approximately two and three times that normally secured from conventional and continuous drawbenches, respectively.

First unit in the line, a swivel-type uncoiler, has two drums mounted on opposite ends of a pivoting arm to

enable placement of one coil on the reel while unreeling the other. Swiveling around a center pivot, the drums are automatically locked in loading and unreeling positions. After the operator's foot treadle unlocks the swinging arm, the coil of raw material can easily be moved from the loading into the working position. A reduction of nonproductive time between two consecutive coils is thus reduced to a minimum. To facilitate removal of the bend and to eliminate any kinks present in the coiled stock, a roller straightener utilizing five straightening rollers is positioned at the beginning of the drawbench. The rod is pushed through the straightener and into the die by two large diameter feed rollers that are motor driven and which are pressed together by a hydraulic cylinder connected to

Component pieces of equipment comprising the continuous line are interlocked electrically and mechanically and provide automatic operation with a production approximately two and three times that normally obtained from conventional and continuous drawbenches, respectively

a hydraulic pump unit used for drawbench operation.

The coil's leading end is pointed and when once gripped by the drawbench jaws, all movement of the feed rollers automatically terminates, and one roller moves back creating a wide gap between the two rollers affording easy entry into the straightener for the first end of the coil. Thus the unit performs as a pull-through straightener with the back pull improving efficiency of the drawing operation.

Back and forth movement of the two carriages containing the built-in jaws, effecting alternately a reciprocating movement so that one carriage going forward pulls the material through the die during the return of the other, provides the continuous drawing operation. The jaws auto-

natically grip the material when advance motion starts and release automatically upon carriage reversal. To avoid marking the stock surface, jaws are provided with polished hardened gripping areas of great length which exert a low specific pressure on the material.

One carriage begins its advance while the other is traveling in the same direction, the movements of both overlapping. As a result, the pull is gradually transferred from one carriage to the other and a uniform continuous advance of the stock is effected. Carriage return is performed at high speed.

Controlled by Pilot Valves

Carriage movement is actuated hydraulically by an oil system, with each carriage being connected to two cylinders placed alongside the drawbench. Their movements are controlled by pilot valves acting on the main control of the hydraulic system and operated by movement of the carriages themselves.

Located at the rear of the drawbench is the hydraulic power unit consisting of two pumps, one for each carriage and driven by a common motor.

To assure the straight-line advance of stock through the drawbench, the drawing die is mounted in the rigid die stand in such a way so it can be easily adjusted in the proper position.

A motor-driven lubrication pump supplies a continuous circulation of oil to the die. Both tungsten carbide and hardened tool steel dies have given good service with this setup.

Auxiliary jaws of the first carriage

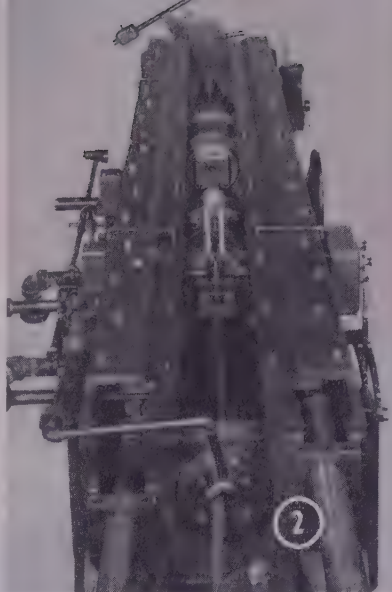


Fig. 2 — View of drawbench showing drawing die in foreground. Inside the drawbench bed are seen the two reciprocating carriages for pulling stock continuously through die

grip the pointed first end of the coil which may be very short since the carriage can be moved quite close to the die. After advancing through the drawbench, the point is cut off on a trimming saw located at the end of the unit.

As stock leaves the drawbench it moves through two sets of straightening rollers, one turning in a horizontal and the other in a vertical plane. Each set of nine rollers contains four which are positively driven. The remaining five idle rollers can be individually adjusted. All roller shafts are mounted with antifriction bear-

ings and grooved to accommodate the various sections to be processed.

Next the material is cut to length by a flying shear which travels in the same direction and at the same speed as the material while it performs the cut. The shear's two cutters are placed opposite each other on slides in the shear carriage which can be moved back and forth between guides in the shear frame. Slides which carry cutters are linked to levers so that during forward carriage movement they approach each other and make the cut, after which they automatically open at the end of the carriage stroke and remain in that position during the return stroke. Oil hydraulically operated cylinders whose pistons are connected to the carriage move it back and forth. Advance speed is synchronized with the travelling speed of the material through the machine, whereas the return stroke is performed at high speed. The shear contains its own oil hydraulic power unit consisting of a motor, pump, tank and circulating pipes.

Photoelectric Cell Effects Operation

A photoelectric cell placed beyond the shear effects its operation when the light beam is interrupted by the advancing stock. Rod previously cut off is removed by the round straightener and disposed behind the shear at a higher rate of speed than the drawing speed, thus producing a gap between subsequent rods. When the ensuing rod interrupts the photo-cell beam, a relay again actuates the solenoid-operated valve beginning the shear operation.

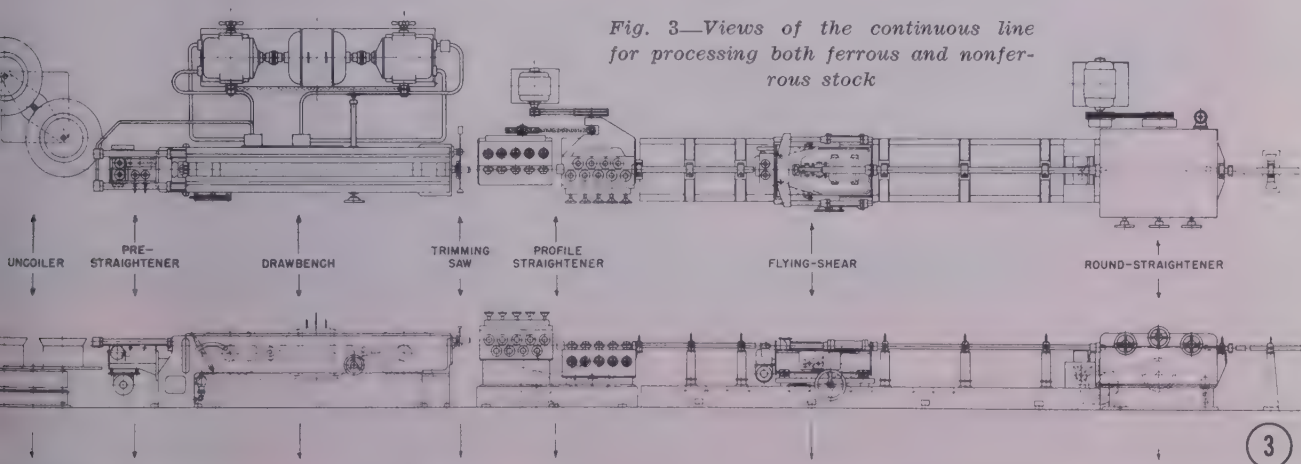
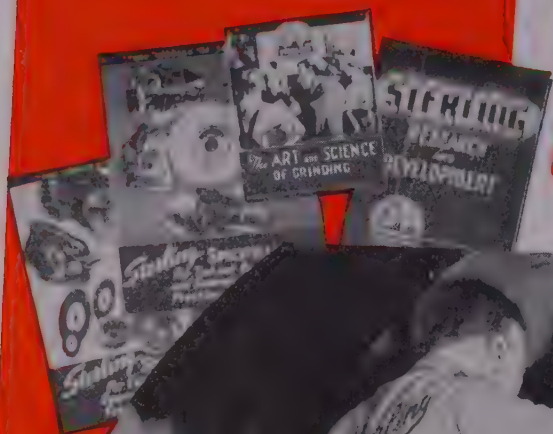


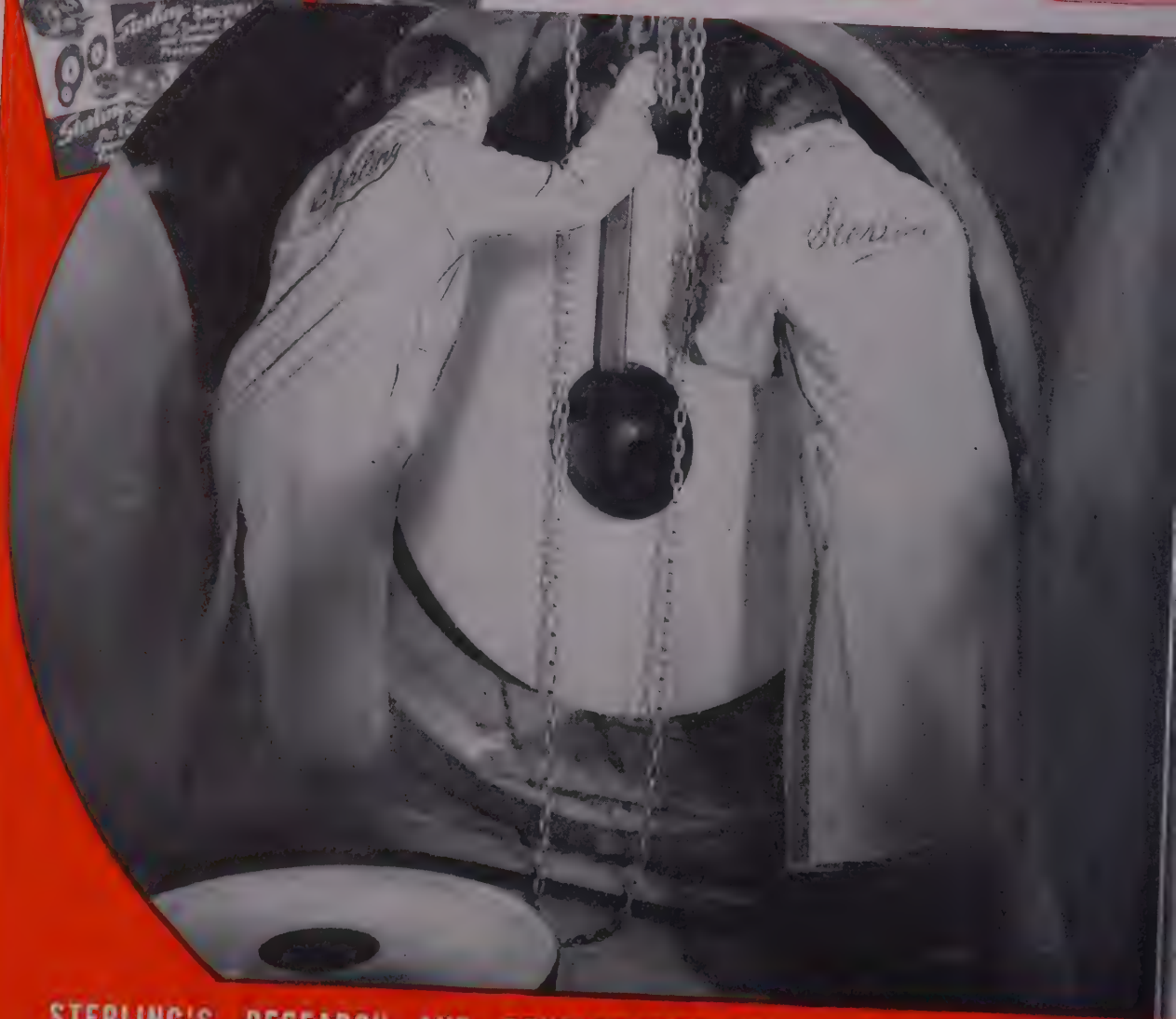
Fig. 3—Views of the continuous line for processing both ferrous and nonferrous stock

These folders are ready for distribution. Send for your copies.



STERLING

WHERE ELECTRONICS
THAT GUARANTEE



STERLING'S RESEARCH AND DEVELOPMENT TECHNIQUE

TWO workers are shown above, placing a Sterling Grinding Wheel in position to be tested in an electronically controlled machine. Here, it will be spun far beyond all safety limits to insure a wheel that can be used with confidence at ordinary grinding speeds.



GRINDING

INSURES WHEEL TESTING POSITIVE SAFETY STANDARDS

STERLING eliminates the human element when testing your "Wheels of Industry". Electronically controlled machines, set to pre-determined speeds, spin the wheels far beyond any stress they will encounter on your grinding jobs . . . insure maximum safe operation.

Identical care is exercised throughout the entire Sterling organization from the time your wheel formula is received from the Sterling engineer until it is delivered as a finished abrasive tool, ready to solve your grinding problem.

This unusual attention to detail is but one of many features of Sterling's New Research and Development Program. It has, as its basic function, the manufacture of the finest grinding wheels you have ever used. Other production executives are obtaining faster, better production from the use of Sterling Grinding Wheels. You can enjoy similar results in your department. A Sterling engineer is on call . . . may we send him today?



FIRST STEP --- What grinding wheel will cut this bar fast and accurately enough that no second grind for finish will be necessary?

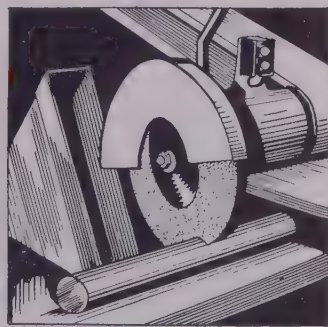
STERLING RESEARCH AND DEVELOPMENT IN ACTION



SECOND STEP - To find the answer, Sterling technicians take a sample of the bar to be cut. Combining its study with results of previous jobs suggests the wheel to use.



THIRD STEP --- From the recommended formula, a test wheel is handmade under strict laboratory control. Here, technical analysis becomes the finished wheel.



FOURTH STEP - On the job, the Sterling Cut-Off Wheel cuts faster, produces more pieces, and lasts longer because it is backed up by definite research and development.

THE STERLING GRINDING WHEEL DIVISION

of
THE CLEVELAND QUARRIES CO.

TIFFIN, OHIO

Since 1885, Manufacturers of "The Wheels of Industry"

Branches: Boston, Chicago, Cleveland, Detroit, Los Angeles, Philadelphia, New York. Distributors In All Cities.

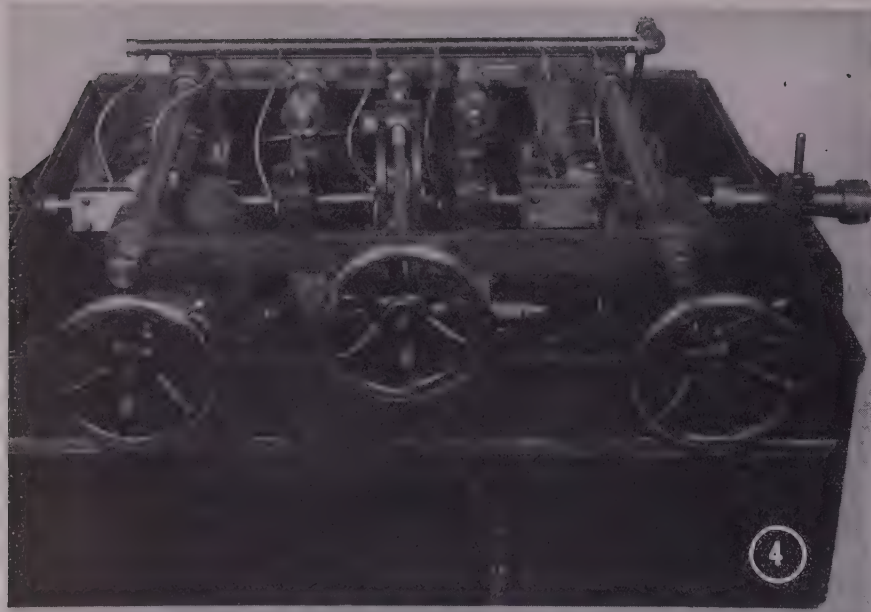


Fig. 4—Round straightener with cover removed showing polishing disks and straightening bushings

Length between cuts is determined by the distance between the photocell and flying shear while in rest position and may be adjusted by

merely shifting the entire shear on its supporting frame.

Material after being cut is moved into the straightening and polishing

machine. It progresses between two sets of motor-driven disks placed at the machine's entrance and exit. Each set of two disks is mounted off center opposite the other and rotates in the same direction. The stock is moved under pressure between the disks and due to the special shape of their hardened surfaces, is caused to pass slightly above their center line. This imparts both a rotating and advancing movement to the material. As the result, a condensed polished stock surface is produced due to the high amount of pressure that is given the material while passing between the disks.

Bushings located between the two sets of disks provide a straightening effect. Being adjustable out of center, they cause the spinning material to bend in all directions, thus relieving stresses incurred during the preceding drawing operation.

The finished product is delivered to a discharge table which is sloped slightly towards adjacent piling racks and mounted behind the polishing machine. If the rod rolls freely over this slight incline into the racks, the operator knows his product is perfectly straight.

Co-operation Urged In Thread System Changes

Modification in the unified and American screw thread standard includes the addition of classes 2A and 2B, the former of which is an external thread classification which provides an allowance or clearance between its maximum metal condition and the minimum metal condition of any class of internal thread into which it assembles. This clearance minimizes galling and seizing in high-cycle wrenching and high temperature applications and also accommodates plating when required. It is recognized as standard practice for production of screws, bolts and other threaded fasteners. Class 2B is an approach to the tolerances required in the production of standard nuts.

Changing to classes 2A and 2B does not affect strength or interchangeability, according to American Society of Mechanical Engineers, New York. It is stated that components are mechanically and functionally interchangeable in all combinations of the new and old classes. To implement changeover to the new classes of thread, users for an indeterminate period should specify the new classes but permit the old classes as optional, according to the society. When specifications are not changed,

users should accept the new classes as optional.

Producers and users have agreed that implementation of the new standards should proceed as rapidly as transition can be effected and that inspection should be governed accordingly. It is recommended that for the time being neither the new nor the old classes as they apply to screws, bolts, nuts and similar treaded fasteners, should be mandatory except for specific applications agreed upon by consumer and producer.

Parts with Two Bores Broached Two at a Time

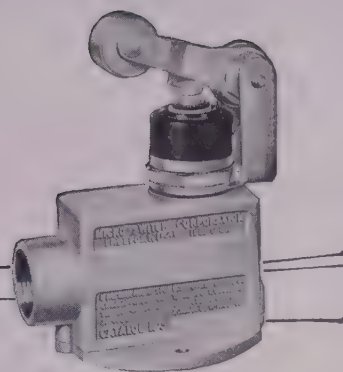
An automobile manufacturer found it necessary to broach two well separated bores accurately in line in forged steel steering knuckles. Working with Colonial Broach Co., Detroit, a setup was made on a 15-ton, 48-inch stroke pull-down broaching machine. Two parts may be handled at one time with the setup. To eliminate idle machine time and to permit the operator to unload and load parts while the broaches were being returned to the cutting position, a shutting platen hydraulically interlocked with machine cycle and an automatic locking and tilting fixture were incorporated in the design.

Rough-bored knuckle is dropped in to the machine fixture, spindle down, the part being located from the spindles and buttons on the lugs of the yoke. When the start button is pushed, the trunnion fixture swings down and the platen shuttles into broaching position. To prevent distortion under cutting load, a cam-operated expansion support between the arms of each knuckle is actuated by a rod between the broaches when they start down to enter the bores. The broaches finish their cut and the platen and fixture return to loading position. Broaches return to the top of the machine while the operator removes the finished parts and drops two more in place in the fixture.

Aids in Color Planning

Color planning is put on a scientific basis by the preselection of preferred and alternate color schemes with the use of a color compass available from Arco Co., Cleveland, Ohio. Planning is based on the exposure and installed lighting in the particular room and the use for which the area is intended. Device consists of two disks, one of which serves as a master color card and the other as a direction finder and guide to the recommended colors. The 12 basic and 28 shades are based on Optonic color system.

Modernizing for economy? Consider this MICRO suggestion



for rehabilitating present equipment!

Many an older machine springs back to new life... giving increased production and savings in operating costs by the installation of MICRO precision switches to make it automatic, to limit operation, to provide electrical interlocks or safety features.

The new 'up-to-date' features so noticeable on new equipment that make management question the ability of the old are often yours by applying a bit of ingenuity—and one or more MICRO precision switches.

When modernizing your equipment, economy suggests that you have your plant men investigate how MICRO precision switches can put new life and new productivity into the equipment you already have!

For experienced aid in the use of MICRO precision switches, write MICRO SWITCH, Freeport, Illinois. Branch offices: Chicago, New York, Boston, Cleveland, Los Angeles. Sales Representatives: Portland, St. Louis, Dallas, Toronto.



Used to make equipment
AUTOMATIC...for LIMIT CONTROL...for SAFETY
...for **ELECTRICAL INTERLOCKS**



MICRO...first name in precision switches

Another in a continuing series of articles on the making of steel and finishing it into products ready for the consumer. Each article is written by an outstanding authority in his particular field.

By CHARLES L. McGRANAHAN

Assistant General Superintendent,
Pittsburgh Works
Jones & Laughlin Steel Corp.
Pittsburgh

Production of

HOT and COLD-ROLLED Strip and Sheets

In this sixth section, the author discusses temper rolling, shearing lines, stretcher leveling, inspection and oiling, porcelain enameling sheets and hot and cold-rolled carbon steel strip

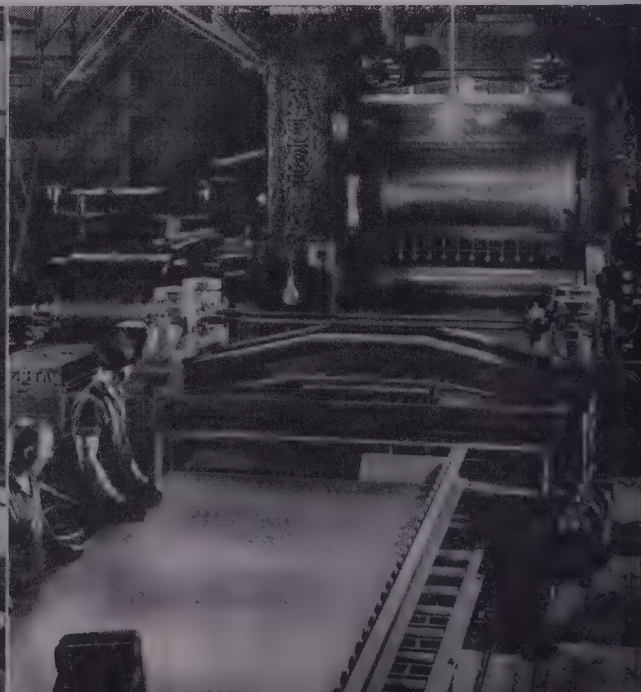
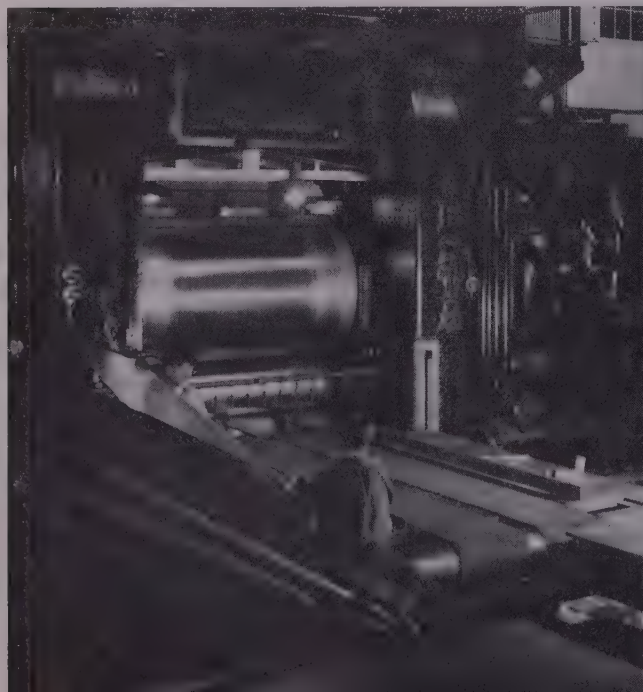
PART VI

SHEETS or strip as delivered from the annealing department are not suitable for use on exposed parts due to their tendency to show stretcher strains when subjected to drawing or elongation between 1.5 and 10.0 per cent. For many applications the lack of sheet flatness would also be objectionable. The correction for these defections is to give the sheet or strip a slight elongation, seldom over $1\frac{1}{2}$ per cent on a two-high or four-high stand of cold rolls. Such a mill is termed a skin, temper, or pinch pass mill, and not infrequently is an exact duplicate of one stand of the tandem mill which performed the original cold reduction operation on the hot-rolled, pickled band. A temper mill for sheets, Fig. 49, consists of a pack tilter, a driven feed-table, a stand of rolls, an exit conveyor, a roller leveler and a piling device with a discharge conveyor of the gravity or power driven type. A mill for coils, Fig. 50, consists of a regenera-

tive feed reel, a mill, a tension reel and an elevating stripper for removing the temper-rolled coil. When the coil weight approaches 30,000 pounds, power driven feed and discharge conveyors for the feed and tension reels become a necessity, as it is not practical to manually handle coils of greater weight.

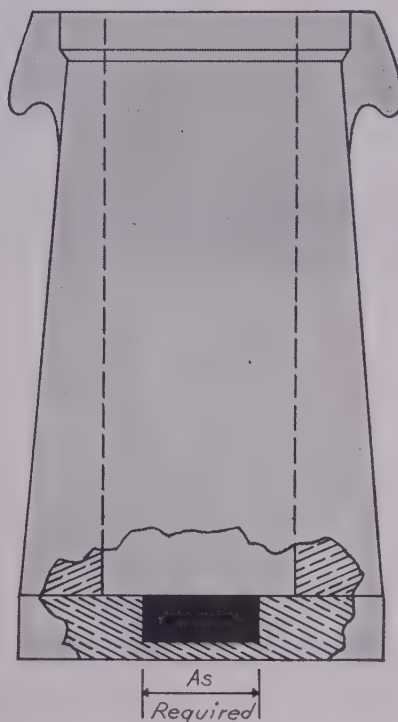
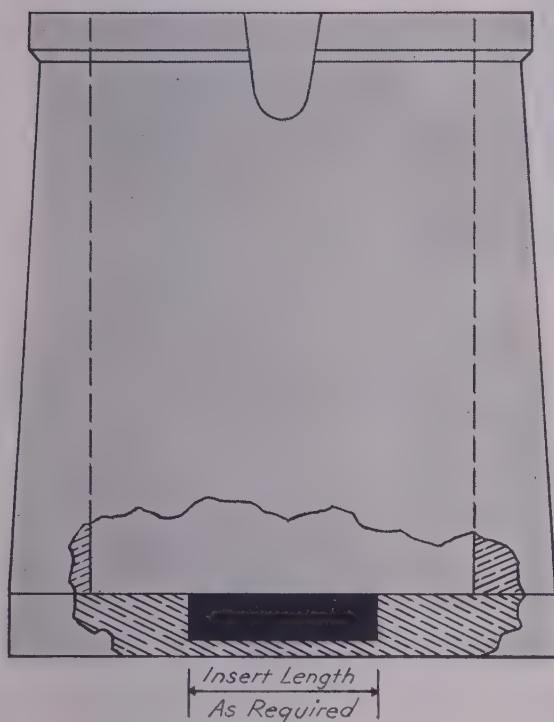
A temper mill performs three functions in its operation: It maintains bright or satin finish of the finishing stand rolls of the tandem mill; it produces a center buckle in the sheet which will permit the roller leveler to deliver a commercially flat sheet; and it imparts a superficial hardness to the sheet which will

Fig. 49—Photo at left shows entry side of a wide temper mill for sheets with pack tilter and power driven feed table. Photo at right shows delivery side with roller leveler and sheet piler. Note gas burners above top work roll for controlling shape of the temper rolled sheet. J&L photos



NO MORE STICKERS!

...when you use "NATIONAL" graphite stool inserts!



Use "National" graphite stool inserts in your open-bottom molds and you *eliminate stickers completely and forever!* Other advantages of graphite stool inserts are:

- They increase stool life by a wide margin
- Fewer stools are required — lower foundry costs
- They resist erosive action of falling molten metal

For more information on "National" graphite stool inserts, write to National Carbon Company, Inc., Dept. S.



The term "National" is a registered trade-mark of
NATIONAL CARBON COMPANY, INC.
Unit of Union Carbide and Carbon Corporation



30 East 42nd Street, New York 17, N. Y.
Division Sales Offices:
Atlanta, Chicago, Dallas, Kansas City,
New York, Pittsburgh, San Francisco

← If you use plug-bottom molds, "National" carbon mold plugs save dollars. They last longer . . . weigh less . . . are truer to shape . . . won't stick, spall, or contaminate the ingot. Write us for complete details.

THESE PRODUCTS SOLD IN CANADA BY CANADIAN NATIONAL CARBON COMPANY LTD., TORONTO 4, CANADA

HOT and COLD-ROLLED

Strip and Sheets

For some purposes, such as furniture stock or wrapper sheets for refrigerators, a sheet with the commercial standard of flatness is not satisfactory. A flatter sheet can be furnished by subjecting it to an operation known as stretcher leveling or patent leveling. The most common form of stretcher leveler, Fig. 53, consists of a large steel housing upon which are mounted a motor-operated movable head with an adjustment of about 10 feet and a hydraulic operated head with a 10-inch stroke. Each head is equipped with gripper jaws for holding the ends of the sheet. Flatness is obtained by elongating the sheet about 3 inches. The sheet will then have gripper marks which may be shipped or if sheets must be accurate to size they are resquared on a hand shear which constitutes an additional operation.

Cold-reduced sheets may be inspected and oiled while in the temper mill, the soft shear or a separate processing line consisting of a bench, an oiling machine and sheet piler. The point of inspection is determined by the quality of the sheet furnished, type of processing (i.e. annealing, etc., in sheets or coils) and additional operations after temper rolling such as stretcher leveling and resquaring. It is readily apparent that sheets shipped in coils would be inspected on the temper mill and that stretcher leveled and resquared sheets would require a bench inspection. Sheets, which are to be shipped in the "annealed-last state" are usually given a pass through a roller leveler, Fig. 54, to improve their flatness while being oiled at the same time. Only one side of a sheet need be suitable for the purpose intended when ordered as a hot-rolled, hot-rolled pickled, or a cold-rolled sheet. When two sides must be suitable for the surface conditions imposed for one side under its respective classification, it constitutes a special requirement. Sheets are counted at temper mills, inspection benches or at the soft flying shears and put in lifts of the proper number for bundling on the shipping floor. Weight of the package is usually determined by capacity of the unloading crane in the customer's plant. The maximum weight of a bundle, either for sheets or coils, seldom exceeds 20,000 pounds.

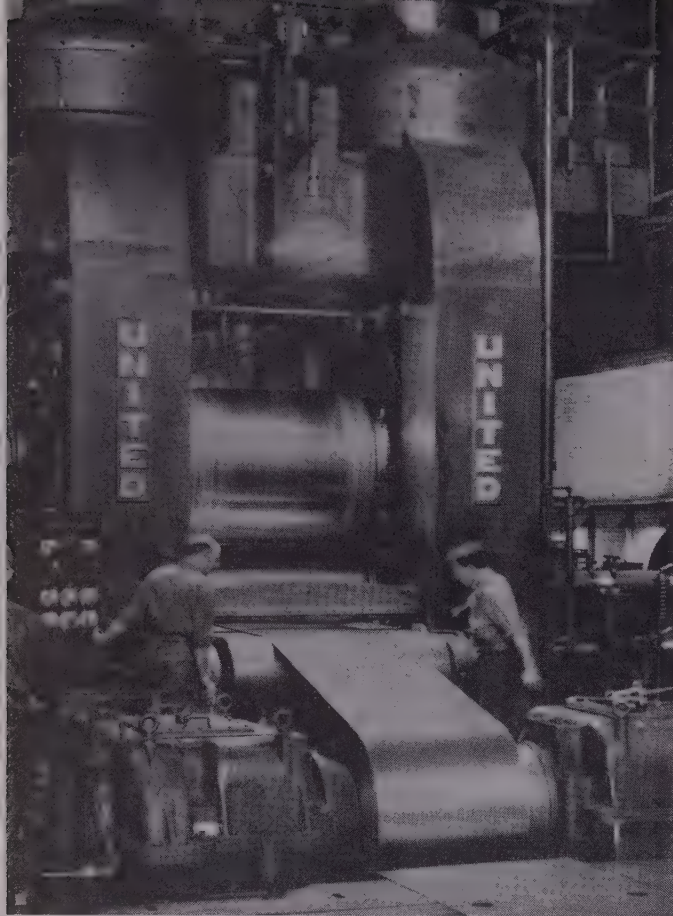


Fig. 50—Entry side of temper mill for coils showing regenerative feed reels. United Engineering photo

prevent the formation of stretcher strains when subjected to a drawing operation. Percentage of reduction on a temper mill is too small to measure with a micrometer so it is determined by measuring elongation of the sheet or elongation of two scribe marks made on the sheet, say 10 inches apart, previous to rolling.

Cold reduced sheets are side-trimmed and sheared to length immediately after tandem rolling if they are to be annealed and temper passed in sheets. When they are to be annealed and temper passed in coils, they are usually side-trimmed after pickling but before tandem rolling and are cut to length after temper passing. The first shear line, Fig. 52, frequently called the hard shear, consists of a cone-type uncoiler, a rotary side-trimming shear with scrap chopper, a combination leveler and shear and a sheet piler. The second type of shear line, called the soft shear, consists of a cone-type uncoiler, a combination leveler and shear, an oiler and a sheet piler. The uncoiler, side-trimmer and shear are similar to those described for hot-rolled sheets. The oiler consists of two sets of pinch-rolls, made up of tightly compressed flannel disks about 8 inches in diameter. A reservoir, above the first set of rolls, is provided with a series of stop locks which regulate oil flow to the rolls while the second set of rolls removes the excess oil. A pump is provided to return this oil to the reservoir. The oiler is usually track mounted so it can be moved aside if dry cut-lengths are desired.

TABLE IV

Tempers	Edges	Finishes
No. 1	No. 1*	No. 1
No. 2	No. 2	No. 2
No. 3	No. 3	No. 3
No. 4	No. 4*	
No. 5	No. 5*	
	No. 6*	

* Asterisk indicates classes in which special production practices are required

TABLE V
IDENTIFICATION OF TEMPER
HARD TEMPER

	Ladle Carbon Limit, per cent	Rockwell Hardness	
No. 1 (Hard)	0.25 max.	B-84 min. for thicknesses 0.070 in. and greater B-90 min. for thicknesses less than 0.070 in.	
SOFT TEMPER			
		Minimum	Maximum
No. 2 (Half Hard)	0.25 max.	B-70	B-85 approximate
No. 3 (Quarter Hard)	0.25 max.	B-60	B-75 approximate
No. 4 (Skin Rolled)	0.15 max.		B-65 approximate
No. 5 (Dead Soft)	0.15 max.		B-55 approximate

A.I.&S.I. Products Manual 13

T and COLD-ROLLED

and Sheets

Porcelain enameling sheets are chemically constituted and suitably processed to best adapt them to the enameling and fabricating requirements of articles to be vitreous coated. They are guaranteed only under proper enameling and fabricating conditions.

Permissible variation for gage weight, thickness, width, length, circle diameter, camber, out-of-square, squaring and flatness are the same as for cold-rolled sheets.

Porcelain enameling sheets are furnished in two grades: Porcelain enameling commercial quality and porcelain enameling deep-drawing quality. Requirements of the two grades, with some modification are practically identical with those of cold-rolled sheets of the same quality and thus will not be repeated.

When sheets are being manufactured for ultimate porcelain enamel coating, they are usually referred to at the mill as vitreous enameling sheets in order to distinguish them from sheets which may be processed for enamels of organic coatings. The coating is in reality a special glass which is fused to the steel's surface. This process naturally involves temperatures as high as the fusing point of the enameling ingredients which frequently are a borosilicate of sodium, potassium, calcium and aluminum and sometimes lead, zinc or barium.

The article that is to be porcelain enameled is first properly cleaned, coated by dipping in the liquid enamel or by spraying liquid enamel on with a spray gun, draining, drying and burning at a temperature of 1000 to 1600 degrees F for a period of from one to three minutes, followed by cooling to room temperature. Additional coats may be applied at a temperature of 1500 to 1530 degrees F or about 50 to 100 degrees F lower than the first or ground coat enamel. Submitting a carbon steel sheet to such temperatures and making a bond with a material of decided different physical properties has naturally resulted in many difficulties which have gradually been overcome. The use of metal and enamel differ considerably as to coefficient of expansion, softness and resistance to shock. This presents such hazards as warpage, excessive oxidation, copperheads, blisters and reboiling. Copperheads and reboiling are associated with inability of the ground coat to absorb excessive iron oxide.

Experience has proven that a sheet of low-carbon, manganese, phosphorous and sulphur content, made under closely controlled conditions on the hot-strip mill and on subsequent processing units, will give a

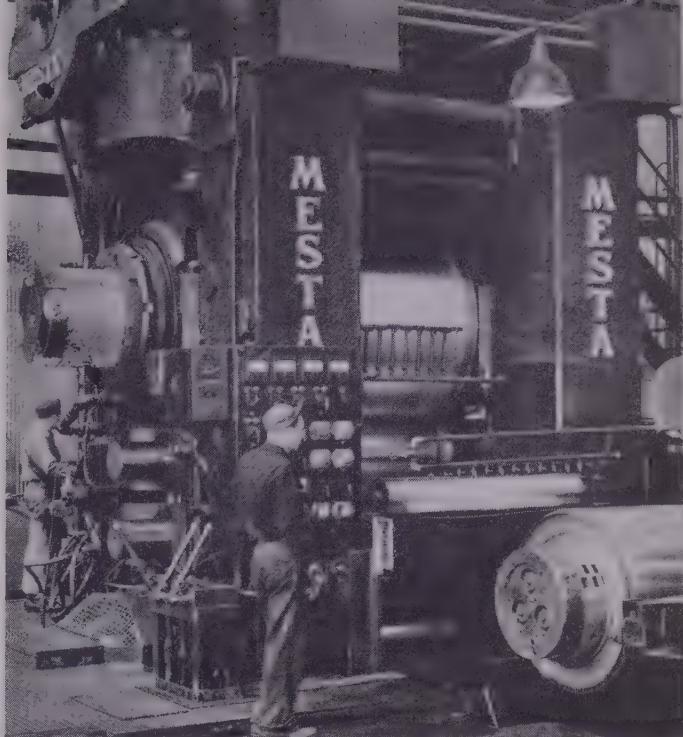


Fig. 51—Delivery side of temper mill for coils showing tension reel. Dan Reebel photo

minimum of trouble during the firing or burning operation.

Hot-rolling of vitreous enameling strip differs from ordinary strip in that the section must be cooled below 1600 degrees F before entering the No. 2 scale breaker and finishing train, otherwise excessive cracks will develop on each side of the strip and it may even fall apart while in the finishing stands. The cold-reduced strip is cut to sheet length, normalized, sheet pickled, scrubbed and dried, box-annealed, skin-rolled, inspected and shipped dry to the customer. Surface of the sheet must be quite rough, therefore the rolls in the tandem mill finishing stand and temper mill receive a more severe shot-blasting than those which are used for the ordinary dull or satin finish.

If the sheet can be rolled to gage on the hot mill, it is rough-cut to length, normalized, pickled and etched, scrubbed and dried, skin rolled, resquared and shipped dry.

The majority of continuous mills, similar to those just described, are engaged in the production of sheets

Fig. 52—Flying shear line for handling coiled product. United Engineering photo



HOT and COLD-ROLLED

Strip and Sheets

manipulated by hand. A roll stand used in some mills was called the "double-duo mill", consisting of a set of housings containing two pairs of rolls arranged in tandem and having the pass line of the second pair above the top roll of the bottom pair. A semi-circular guide returned the strip from the bottom pair to the top pair of rolls without appreciable loss in heat and at a considerable saving in floor space. Similar ingenious devices were used by early strip mill designers until development of variable-speed motors and individual drives made the continuous strip-mill a reality. For narrower widths, the conventional merchant mill practice of alternately rolling an oval and then a square section may be followed until the approximate section is reached, after which it will be rolled flat to the desired size.

A distinguishing feature of the strip steel as contrasted with sheet steel is the limited tolerances for width and thickness. An inspection of tolerances tables for these commodities (Steel Products Manual, No. 11, 12, 13, AISI) will reveal the fact that allowances for over and under width and gage for strip are only a fraction of those permitted for sheets. It should therefore be realized when strip is produced by slitting sheets in coils that the product was rolled to sheet tolerances and that in all probabilities some of the slit coils will have gage variations in excess of that normally specified for strip widths.

It is customary to specify the type of edge that is to be furnished upon hot rolled strip such as: Mill edge, square edge and slit edge. Mill edge is the edge incident to normal rolling practices and does not conform to a definite contour. Square edge is produced by hot edge rolling. It is apparent that this edge would be difficult to produce on light and wide sections of strip. Slit edge is obtained by slitting either in single or multiple widths and is an operation

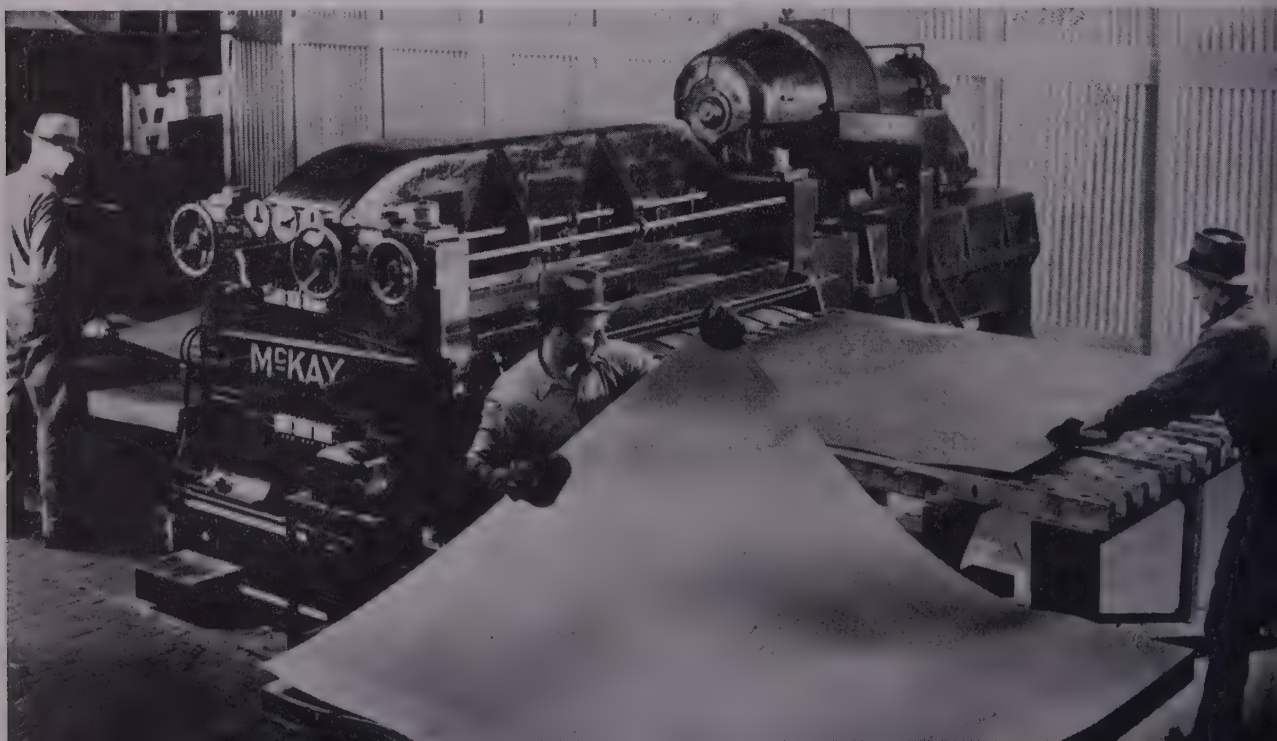


Fig. 53—Hydraulically operated stretcher leveler for producing dead-flat sheets. J&L photo

in coils or in cut lengths and it may be reasonably asked how narrow widths of strip are rolled.

Up to about 5 inches in width, the strip is rolled from a billet upon a continuous merchant mill or a looping mill where the train consists of a series of 2-high and 3-high stands of rolls set side-by-side similar to the hand sheet mills except being closer together. Wider strip up to 24 inches in width is produced from slabs. Frequently the roughing train of a looping mill is arranged for continuous straight-line operation up to the point where the section can be

Fig. 54—Roller leveling "annealed last" sheets. Wean Engineering photo



HERE'S THE

KEY

TO
PLENTY OF GAS

this winter

NOW is the time to install a Phillips designed LP-Gas plant in your own "back yard." All components, storage tanks, vaporizing units, diluting equipment, etc., are ready now for your word to "go ahead."

And think of the benefits! You'll enjoy continuous

plant production even when natural or manufactured gas is rationed or cut off completely from industrial users. No more costly shut-downs and slow-downs during fuel curtailments.

Get in touch with us today. Fully qualified engineering counsel is available to you without obligation from our nearest district office.



**SPECIALISTS IN LP-GAS
FOR STAND-BY GAS
OR CONTINUOUS USE**

PHILLIPS PETROLEUM COMPANY

Philgas Division

SALES DEPARTMENT

Bartlesville, Oklahoma

DISTRICT OFFICES IN AMARILLO, TEX., ATLANTA, GA., CHICAGO, ILL., DENVER, COLO., DES MOINES, IA., DETROIT, MICH., INDIANAPOLIS, IND., JACKSON, MISS., KANSAS CITY, MO., MILWAUKEE, WISC., MINNEAPOLIS, MINN., NEW YORK, N. Y., RALEIGH, N. C., ST. LOUIS, MO., TULSA, OKLA., WICHITA, KAN.

HOT and COLD-ROLLED

Strip and Sheets

a radius equal to its thickness. It is suitable for applications requiring rigidity and little forming.

No. 3 (quarter hard temper) is a temper which imparts a medium soft characteristic to the strip and can be obtained by suitable temper rolling after annealing. The product may be bent 180 degrees across the direction of rolling and 90 degrees in the direction of rolling around a radius equal to the thickness. The strip will withstand limited bending, forming and drawing operations.

No. 4 (skin rolled temper) is the temper which leaves the strip in a soft, ductile, skin rolled condition. As such, it is suitable for fairly deep drawing with freedom from stretcher strains. It can be bent flat on itself in any direction.

No. 5 (dead soft temper) is the temper found in the strip upon its cooling after annealing and is subject to stretcher straining and fluting when drawn. It is suitable for difficult drawing application where surface disturbances are not objectionable such as concealed parts in stoves or automobiles.

A review of Table IV showing the different edges available reveals the fact that four of the six edges listed require special processing. No. 2 edge is the natural mill-edge and No. 3 is the one obtained during a normal slitting operation. Improvement on these edges is obtained by edge-rolling the natural edge, by filing after slitting or by edge-rolling after slitting.



Fig. 55—Rockwell hardness tester for carbon steel sheets and strip. J&L photo

that can be performed with considerable accuracy as to widths. It is available in cut lengths or in coils.

The quality classification of strip closely resembles many of those for sheets and may be consulted in the AISI manuals referred to above on the question of strip tolerances.

It will be noted from Tables I and II* that while hot-rolled strip can have a maximum width of 12 inches, cold-rolled strip widths extend up to 23-15/16 inches inclusive. Flat cold-rolled steel 1/2-inch or less in width is classed as flat wire. These widths are usually made by flattening a round rod or wire on a two-high tandem mill.

Cold-rolled strip is characterized by a variety of tempers, edges, and finishes in which it can be furnished. See Table IV.

Temper numbers are used to indicate certain features of the strip which are obtained by varying the treatment given the material during processing after cold reduction. They impart information regarding strength, hardness and ductility which would require several testing operations to reflect. For simplicity, identification is made from the strip's Rockwell hardness which is obtained by pressing a small ball into the surface of the steel by means of a uniform weight on a system of lever arms, then reading the penetration depth on a dial calibrated against a standard block.

Hardness of strip and sheet steel is given on the "B" scale of the testing machine, Fig. 55, which employs a 1/16-inch diameter ball under 100 kilograms of pressure for this purpose.

No. 1. (hard temper) is the temper of the steel in the "as rolled" condition from the tandem mill. It is the hardest temper that can be produced by the cold reduction of low-carbon steel. It is suitable for flat work or work requiring a minimum of forming. See Fig. 56.

No. 2 (half hard temper) is a temper which imparts a moderately stiff characteristic to the strip and is secured by changing analysis, percentage of total reduction during tandem and temper rolling, and annealing temperature. The strip is capable of being bent 90 degrees across the direction of rolling around

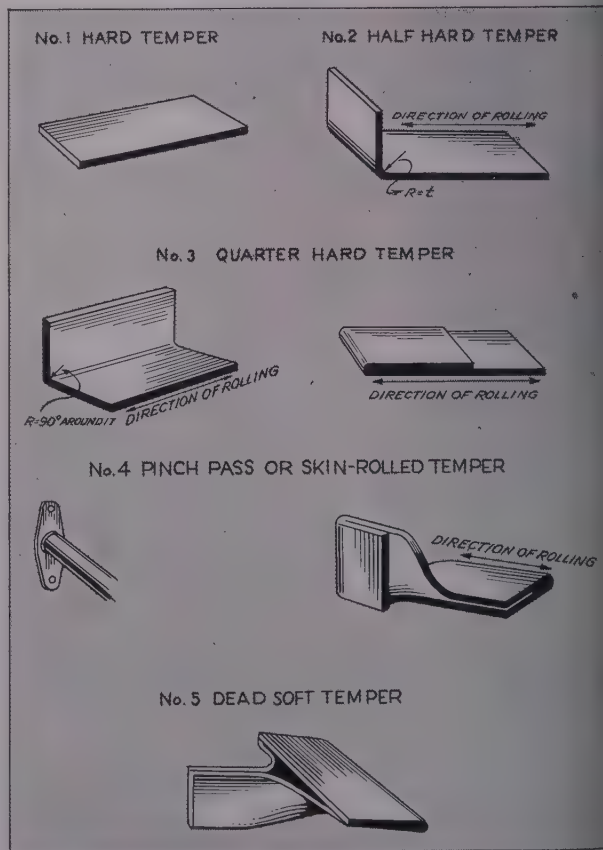


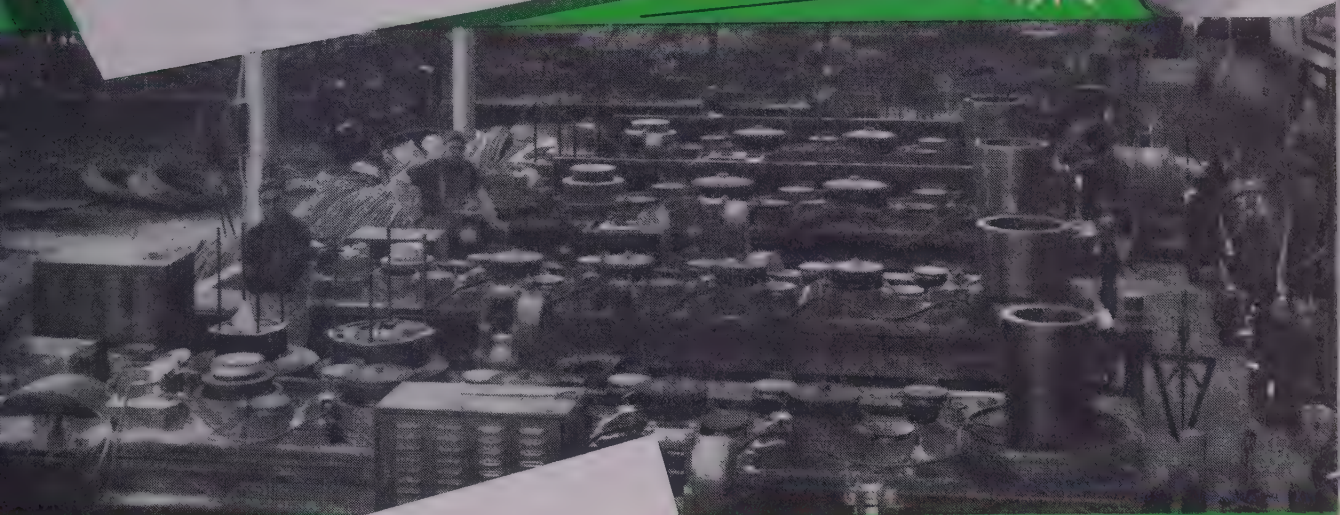
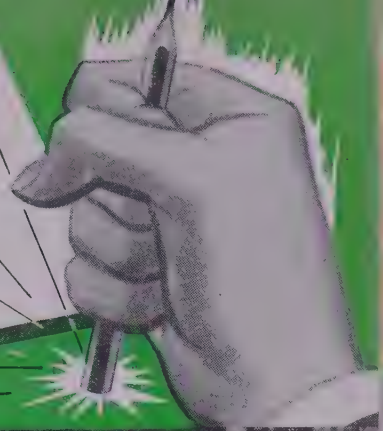
Fig. 56—Types of formation for which various temper numbers of cold-rolled carbon steel strip are suited. AISI Products Manual 13

"Get it down cold"

—efficiently

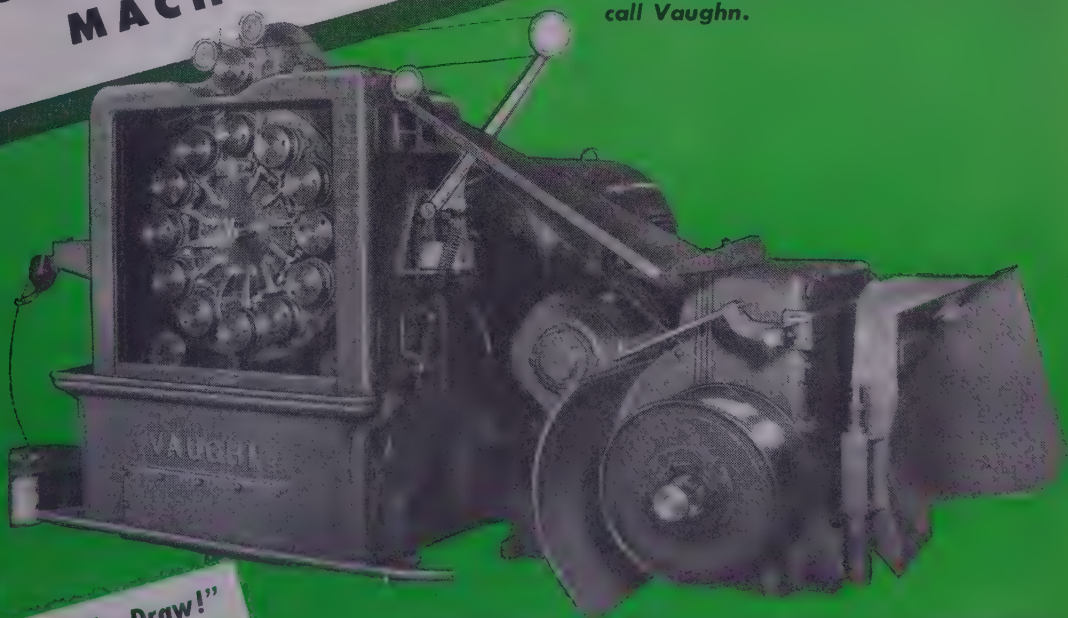
—dependably

—economically



with **Vaughn**
**COLD DRAWING
MACHINERY**

Vaughn Cold Drawing Machinery thrives on long, hard runs because we build tough *production-ability* into each and every unit. Vaughn flexibility and versatility take care of the short runs, too! For cold facts on cold drawing problems of every type, call Vaughn.



"Quick on the Draw!"
VAUGHN MACHINERY
PROFITABLY USED BY LEADING
WIRE MILLS SINCE 1871

THE VAUGHN MACHINERY COMPANY
CUYAHOGA FALLS, OHIO, U. S. A.

COMPLETE COLD DRAWING EQUIPMENT—Continuous or Single Hole . . .
for the Largest Bars and Tubes . . . for the Smallest Wire . . . Ferrous,
Non-Ferrous Materials or their Alloys.

HOT and COLD-ROLLED

Strip and Sheets

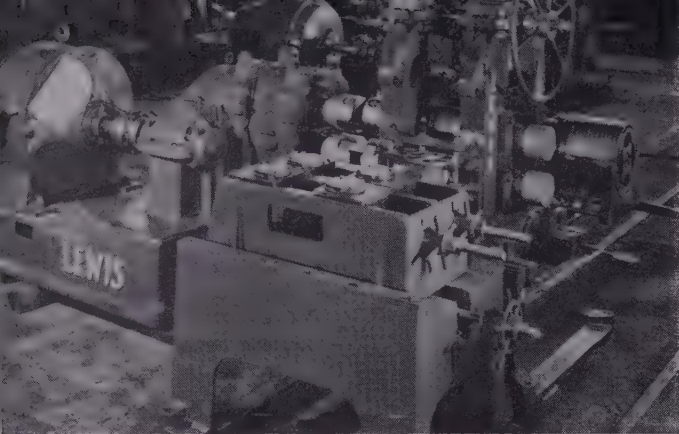


Fig. 57—Two-high temper mill for narrow strip with edging rolls on entry side of mill. Grooves for various strip thicknesses can be noted on vertical rolls in the foreground. View shows mill before its installation. Lewis Foundry & Machine photo

Edge-rolling is usually performed at the same time the strip is being skin passed after annealing. Edging rolls are mounted in a stand on the entry side of the temper mill, Fig. 57, carry a number of identical or different shaped grooves and are of varying widths.

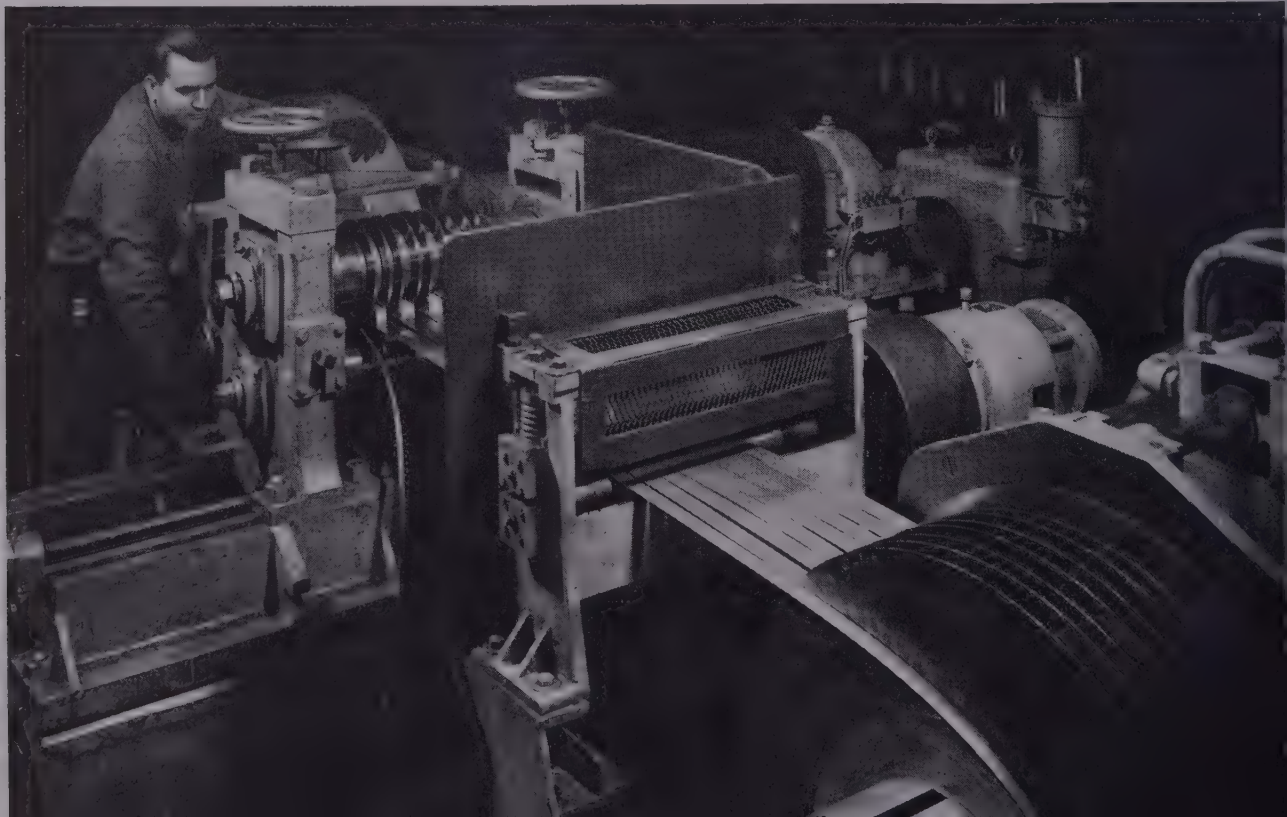
Slitting may be performed upon a single strip to produce a single width or a wide strip may be cut in multiple as shown in Fig. 58, to produce a number of slit edge coils. A slight burr on the edges is common to slit-edge strip and this may be removed by edge-rolling or filing. Filing is accomplished by means of filing boards which consist of spring loaded holders to which are attached a number of rectangular files. These holders may be adjusted to contact the strip's edge at various angles, thereby producing different contours. A tension reel pulls the strip through the filing boards which remove the burrs and shape the section if so desired.

No. 1 edge is a round, square or beveled edge produced to accurate width with very close tolerances or with a very excellent finish suitable for electroplating or both. No. 2 edge is the natural mill edge carried through the cold rolling from the hot-rolled strip without any attempt to change its contour. No. 3 edge is that produced by rotary side trimming of the original mill edge or by multiple slitting as illustrated in Fig. 58. This is an approximately square edge. No. 4 edge is a round edge produced by edge-rolling either the natural edge of a hot-rolled strip or the square edge of a slit strip. No. 5 edge is an approximately square edge produced by edge-rolling with a square pass or by the filing of a slit edge, the only purpose being to remove the slitting burr. No. 6 edge is a square edge produced by edge-rolling the natural edge of hot-rolled strip or slit-edge strip and is used where width tolerances and finish are not as exacting as those for No. 1 edge.

Regarding finishes, No. 1 or dull finish is one without lustre and is produced by rolls which have been given a roughened surface by means of shot-blasting or acid-etching. This surface is especially suitable for paint adherence and, due to its ability to carry lubricant in the pores, works particularly well in the draw press. No. 2 or regular bright is a lustre finish produced by rolling on rolls having a moderately high finish. No. 3 or best bright finish is the finest surface that can be secured by processing with ground and polished cold-rolls. Extreme precaution must be exercised at the cold-reduction and temper mills to secure this finish which is suitable for the most exacting requirements such as electroplating.

(To be continued)

Fig. 58—Slitting line for cutting strip in narrow multiples. Wean Engineering photo



KEOKUK KWIZ

Q: WHAT IS THE PERFECT MIX
FOR CUPOLAS AND THE
PERFECT BLOCK FOR OPEN
HEARTH HEATS?

A: KEOKUK ELECTRO-SILVERY

because of:

- 1. Uniformity** ... accurate percentages of silicon, iron and alloys, as desired.
- 2. Control** ... specially processed in the electric furnace it has all the advantages of complete and constant control.
- 3. Easy Handling by Magnet**
- 4. Orderly stock piles and accurate handling**—no contamination is possible.

WRITE FOR

Free twenty-two page book—beautifully illustrated in full color.

Four page booklet completely explaining the advantages of Keokuk Electro-Silvery 12½ lb. piglets.



60 lb. pigs for blocking the open hearth heat.



30 lb. pigs for charging the cupola mechanically or by hand.



12½ lb. piglets so uniform in weight that they may be charged into the cupola by hand.

KEOKUK

→ BY KEOKUK ELECTRO-METALS COMPANY
electro-silvery
KEOKUK, IOWA

WENATCHEE DIVISION, WENATCHEE, WASHINGTON

SALES AGENTS: Miller and Company

332 S. Michigan Avenue
Chicago 4, Illinois

3504 Carew Tower
Cincinnati 2, Ohio

407 N. Eighth Street
St. Louis 1, Missouri

Greater Service to Fork-Truck Users

Greater Opportunities for Men Who Sell Them —

Clark Dealer Plan Achieves Both



WITH sales of its fork-lift trucks and industrial towing tractors exceeding all expectations, and with its position of production and engineering leadership firmly rooted in rich, productive soil, Clark Equipment Company, in its 30th year as a builder of materials-handling machines, has found it desirable to establish a nation-wide organization of independent franchised dealers as exclusive distributors of the products of its Industrial Truck Division.

THIS is indeed a far cry from 1939 when the entire output of the Industrial Truck Division was sold with ease by a handful of men!



TODAY's volume is twenty times that of 1939; and the Company's stature—financial and engineering—is more than twenty times as great as in 1939. A considerable number of the '39 machines are in daily service, and many older machines are in regular operation after 20 and 25 years. The conviction is natural that 30 years hence many '49 machines will still be "on the job" alongside the new output of 1979. There will be no "orphans" bearing the name "Clark."

TO KEEP PACE with increasing demands, and to deliver the broad and competent service which Industry expects from Clark, the Company has chosen this plan of selling through independent dealers as a sound and logical evolution. Until the middle of 1948, approximately one-third of Clark's Industrial Truck Division representatives were on an independent dealer basis. It is expected that by the end of

1949 the nation-wide dealer organization will be complete.



HEADING up the dealerships or actively participating in them are key men of Clark's erstwhile factory-branch sales offices—factory-trained men, tested and proved as capable materials-handling counselors. These men share with Clark management the conviction that they can deliver, under the new plan, a broader and more valuable service to their customers and to all users of mechanized materials-handling; that they face broader, deeper vistas of opportunities which ambitious men so earnestly desire—opportunities for independence, for building greater earnings by their own efforts, for achieving prestige and leadership in their communities.



ANOTHER influence which furthered the plan is the fact that Clark management historically has been engineers and manufacturers. By decentralizing marketing activities, Clark can intensify its emphasis on development of better materials-handling machines and methods—to the end that Clark products shall achieve even higher excellence at lower cost, shall become still more valuable to industrial users and to the dealers who serve them.

THROUGH your Clark dealer, all the advantages of Clark engineering, integrated production and matchless experience are quickly available to you. He is fully qualified to make an unbiased appraisal of your materials-handling operations, and to recommend the type of machine that will serve you most efficiently at lowest cost. It's "good business" to CONSULT CLARK.

CLARK EQUIPMENT COMPANY

INDUSTRIAL TRUCK DIVISION

BATTLE CREEK 26, MICHIGAN

OTHER PLANTS—BUCHANAN • JACKSON • BERRIEN SPRINGS, MICHIGAN
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

AUTHORIZED CLARK DEALER

ALABAMA: BIRMINGHAM

*M-H EQUIPMENT COMPANY
845 LOMB AVENUE

ARIZONA: PHOENIX

ROBERT H. BRAUN COMPANY
743 GRAND AVENUE

ARKANSAS: LITTLE ROCK

FRED J. VANDEMARK COMPANY
209 EAST MARKAM STREET

CALIFORNIA: FRESNO 1

ROBERT H. BRAUN COMPANY
505 MASON BUILDING

LOS ANGELES 23

*ROBERT H. BRAUN COMPANY
3008 EAST OLYMPIC BLVD.

OAKLAND 3

*GLEN L. CODMAN COMPANY
10521 PEARMAIN STREET

STOCKTON

GLEN L. CODMAN COMPANY
409 BELDING BUILDING

COLORADO: DENVER 2

J. N. MEADE

420 U. S. NATIONAL BANK

Service: FORK LIFT TRUCK SERVICE

2855 WEST 8TH AVENUE

CONNECTICUT: NEW HAVEN

*C. E. REUTTER CORPORATION
66 AMITY ROAD

FLORIDA: TAMPA

CLARK EQUIPMENT COMPANY
1145 ELLAMAE STREET

GEORGIA: ATLANTA

M-H EQUIPMENT CO.
(CONTACT BIRMINGHAM)

ILLINOIS: CHICAGO 4

MODERN HANDLING EQUIP., INC.

310 SOUTH MICHIGAN AVENUE

(Service: Cook County)

LIFT TRUCK SERVICE COMPANY

6919 SOUTH HALSTED STREET

INDIANA: INDIANAPOLIS 5

*W. A. MARSCHE & SONS

1121 E. 46TH STREET

SOUTH BEND 14

*MATERIALS HANDLING EQUIP. CO. OF

SOUTH BEND, IND.

2625 SOUTH MICHIGAN STREET

IOWA: DAVENPORT

BIG RIVER EQUIPMENT CO.

1344 WEST THIRD STREET

Service: DAVENPORT ALL-WHEEL-DRIVE CO.

1344 WEST THIRD STREET

DES MOINES

*BIG RIVER EQUIPMENT CO.

914 GRAND AVENUE, ROOM 255

KANSAS: KANSAS CITY

Sales and Service:

(SEE KANSAS CITY, MISSOURI)

WICHITA

Service: GENERAL ENGINE & EQUIPMENT CO.

218-220 SOUTH WICHITA

LOUISIANA: NEW ORLEANS

T. G. FRAZEE

910 CARONDELET BLDG.

MAINE: PORTLAND

BRODIE INDUSTRIAL TRUCKS, INC.

465 CONGRESS STREET

MARYLAND: BALTIMORE

*FALLSWAY SPRING & EQUIPMENT CO.

CORNER FALLSWAY & LEXINGTON

MASSACHUSETTS: BOSTON (MALDEN 48)

*BRODIE INDUSTRIAL TRUCKS, INC.

50 COMMERCIAL STREET, MALDEN 48

MICHIGAN: BATTLE CREEK

*CLARK EQUIPMENT COMPANY

INDUSTRIAL TRUCK DIV. PLANT 1

DETROIT 2

CLARK EQUIPMENT COMPANY

6520 CASS AVENUE

Service: INDUSTRIAL TRUCK SERVICE, INC.

8815 HARPER AVENUE

MINNESOTA: MINNEAPOLIS 2

MATERIAL HANDLING ENGINEERS

225 SOUTH 5TH STREET, ROOM 201

Service: SMITH-DUNN COMPANY, INC.

2301 UNIVERSITY AVENUE, S. E.

MISSOURI: KANSAS CITY 6

CLARK EQUIPMENT COMPANY

1009 BALTIMORE AVENUE

Service: LIFT TRUCK SERVICE & SUPPLY

NORTHWEST 15TH AND MCGEE STREETS

ST. LOUIS 8

MATERIALS HANDLING EQUIPMENT CORP.

3820 WASHINGTON BLVD.

Service: FORK LIFT TRUCK SERVICE CO.

511 NORTH CHANNING AVENUE

AUTHORIZED CLARK DEALERS

NEW JERSEY: JERSEY CITY

JERSEY INDUSTRIAL TRUCKS, INC.
34 EXCHANGE PLACE

Service: BOND INDUSTRIAL MAINTENANCE CO.
51 CLARKSON STREET AT GREENWICH, N. Y. 14

NEW YORK: BUFFALO

*BRODIE INDUSTRIAL TRUCKS INC.
1450 MICHIGAN AVENUE

NEW YORK 6

*BOND INDUSTRIAL EQUIPMENT CO.
165 BROADWAY, ROOM 2200 (OFFICE)

Service and Display Room:
51 CLARKSON STREET AT GREENWICH, N. Y. 14
also 289 BOND STREET, BROOKLYN 31

SYRACUSE

BRODIE INDUSTRIAL TRUCKS INC.
712 STATE TOWER BLDG.

ALBANY (WATERVLIET)

*INDUSTRIAL TRUCK SALES, INC.
BROADWAY AT 25TH, WATERVLIET

NORTH CAROLINA: CHARLOTTE

CLARK EQUIPMENT CO.
416 KESWICK AVE.

GREENSBORO

Service Outlet only:

INDUSTRIAL TRUCK SERVICE CORP.
629 SOUTH SPRING STREET

OHIO: CINCINNATI 9

*ROBERT C. YOUNG & CO.
4453 34TH AVENUE

CLEVELAND

CLARK EQUIPMENT COMPANY
522 ROCKEFELLER BLDG.

TOLEDO 10

P. L. REYNOLDS, 2558 FULTON STREET
Service: WILLIS DAY STORAGE CO.
801 WASHINGTON STREET

OKLAHOMA: TULSA

ARST EQUIPMENT COMPANY
34 NORTH MADISON

OREGON: EUGENE

PRESTON FALLER COMPANY
891 TAYLOR STREET

PORTLAND 5

PRESTON FALLER COMPANY
1220 S. W. MORRISON STREET

PENNSYLVANIA: HARRISBURG

BRODIE INDUSTRIAL TRUCKS, INC.
3229 MEADOW LANE

PHILADELPHIA 22

BRODIE INDUSTRIAL TRUCKS, INC.
1605-23 NORTH FRONT STREET

Service:

PHILADELPHIA ENGINE REBUILDERS, INC.
330 WEST QUEENS LANE

PITTSBURGH

*MATERIAL HANDLING INCORPORATED
319 THIRD AVENUE

SOUTH CAROLINA: COLUMBIA

M-H EQUIPMENT CO.
(CONTACT BIRMINGHAM)

SOUTH DAKOTA: SIOUX FALLS

CENTURY EQUIPMENT & SUPPLY CO.
22 WEST 7TH STREET

TENNESSEE: MEMPHIS 3

*FRED J. VANDEMARK COMPANY
1110 UNION AVENUE

TEXAS: DALLAS

T. G. FRAZEE
1012 FIRST NATIONAL BANK BLDG.

Service: TRUCK EQUIPMENT COMPANY
2409 COMMERCE STREET

HOUSTON

*T. G. FRAZEE, 810 PETROLEUM BLDG.

UTAH: SALT LAKE CITY

ALBERT J. ISAACSEN CO.
45 SOUTH 3RD WEST STREET,

VIRGINIA: NORFOLK

*McLEAN-SHAND, INC.
955 WEST 21ST STREET

WASHINGTON: SEATTLE 1

*PRESTON FALLER COMPANY
1921 MINOR AVENUE

SPOKANE 9

PRESTON FALLER COMPANY
EAST 41 GRAY AVENUE

WISCONSIN: MILWAUKEE 2

CLARK EQUIPMENT COMPANY
759 NORTH MILWAUKEE AVENUE, ROOM 623

Service: LIFT TRUCK SERVICE CO.
5710 WEST NATIONAL AVE., WEST ALLIS, WIS.

DISTRICT OF COLUMBIA: WASHINGTON

CLARK EQUIPMENT COMPANY
927 15TH STREET N. W.

TERRITORY OF HAWAII: HONOLULU

*PRESSED STEEL CAR COMPANY
538 REED LANE, P. O. BOX 300

*Sales and Service Combined.

Boring-Facing Operation

Handles Two Typewriter Tubes Simultaneously

BORING and facing of aluminum and magnesium tubes, used as platen and power roll cores in electric typewriters, are rapidly performed operations in the Poughkeepsie, N. Y., plant of International Business Machines Corp. The tubes, measuring about 1½ inches outside diameter and having ⅛-inch walls, vary from 10 to 30 inches in length. After boring and facing, ends are plugged and each tube is covered with rubber that is ground to correct diameter after vulcanizing.

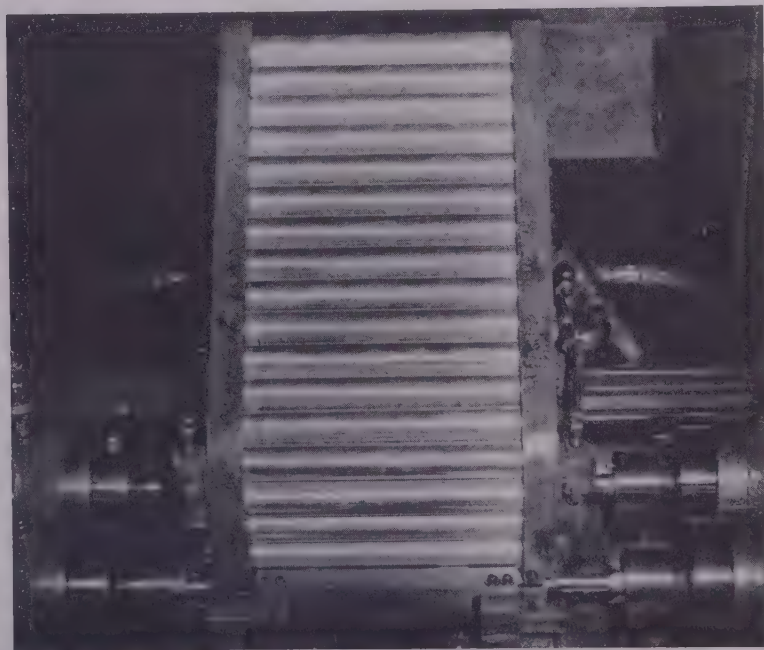
Tubes previously are cut slightly longer than finished length. They are fed, two at a time, into a Stokerunit machine from a duplex magazine above the work holder at the center of the bed. The machine, because it has two heads at each end that move into the work simultaneously, reduces cutting time to a minimum by machining two tubes at one time.

At the start of the cycle, the tubes fall into slots of the fixture and are air clamped in V-jaws at each side of the two slots. As

clamping is completed, the two boring heads at each side of the fixture advance toward it and carbide tools in cutter spindles make their boring cuts. At the ends of these cuts, facing and chamfering bits are brought into play, finishing the tubes to length. The heads automatically retract after this operation.

When the spindles clear the tubes, the latter are automatically unclamped and fall out of the fixture. Two new tubes feed into place by gravity. As this occurs, and before the fixture locks again, jets of air directed from both ends of the clamping slots blow out chips to prevent interference with correct location of the work.

Only operation function is to supply tubes to the magazine, press the start button for each cycle and gage occasional finished parts. In this setup, 100 tubes have both ends finished per hour. Since the loading of the magazine is done well away from the clamping jaws and moving parts, there is no safety hazard.



Setup in double-end machine equipped with magazine to feed tubes into a two-place fixture for boring, facing and chamfering in an automatic cycle

Tube Welding Processes and Machinery Contribute to

10-Fold Production Increase

BICYCLE manufacture consumed the first oxyacetylene-process-produced welded steel tubing made by Michigan Steel Tube Products Co., Detroit. The company, which is celebrating 33 years in the manufacture of electric resistance welded tubes, now is seeing its tubing used in the manufacture of hundreds of widely different products, including toys, home and office equipment, airplanes and automobiles. Operating two plants, one in Detroit and the other in Shelby, O., the company was founded by Charles E. Miller, who has continued as president and general manager since inception of the organization, Oct. 15, 1916.

Original plant floor space was 30,000 sq ft, with 65 employees on the

payroll. Present floor space utilized is 245,550 sq ft, and the company employs 550. Maximum production capacity was 600,000 feet per month in 1916; today it is 6,000,000 feet.

In the early days, 75 per cent of the production consisted of straight tubing. As facilities were added, and as the automotive and other industries became familiar with the economy and adaptability of the tube welding process, the type of product changed to 75 per cent formed and fabricated parts and only 25 per cent straight tube. The company was the first to be granted a license to manufacture electric resistance welded steel tubing as covered by the Johnson patents. This is the process that permits high welding speed with a

reduction in power consumption and less material in a narrower strip for welding.

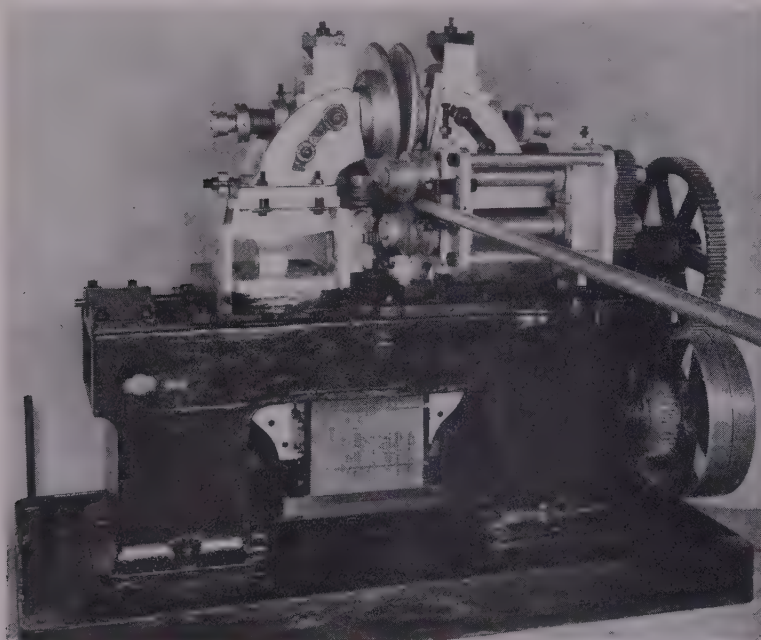
First electric resistance welder for light wall tubing was constructed by O. Parpart in 1896; this machine is owned by Michigan Steel. The company built a welder of its own design in 1922, the machine producing a weld flash comparable to the Johnson weld. The machine employed as its base, the base and tube propelling unit of one of the oxyacetylene tube welders then in use by the company. It combines the operations of forming, welding, sizing, straightening and cutting into one complete tube mill.

Tubing for the War Effort

During World War II the industry played a major part in supplying all kinds of tubing for the war effort. Michigan Steel Tube produced chrome-molybdenum steel tubes and other types, as well as assemblies for aircraft and ordnance departments. These included condenser tubes, boiler tubes and burster tubes for 75 mm shells. It also tooled for and made 50,000 incendiary bomb cases a day for the chemical warfare department.

An example of the adaptability of welded tubing in the automotive industry is the electric resistance welded propeller shaft. Michigan, in 1928, was the first to produce this type of shaft. At one high peak of production, 20,000 shafts were produced in one day.

First electric resistance welder for light-wall tubing, built by O. Parpart in 1896. It is now in possession of Michigan Steel Tube Products Co.



Book on Aluminum Finishes Published

Basic information on the various processes for applying surface finishes to aluminum, as well as the characteristics of the finishes so produced, are contained in a new technical manual, *Finishes for Aluminum*, issued by Reynolds Metals Co., Louisville, Ky. It is a revision of the two-volume book with the same title published in 1946. Main difference between the two editions is that in the revision, the processes adapted to con-

tinuous production operations are separated from the finishes only partially adapted to mass production techniques as well as those not yet fully established.

Included in the 124-page 6 x 9 inch book are chapters on characteristics and properties of aluminum, cleaning treatments, mechanical finishes, chemical treatments, electrolytic oxide, electroplated, organic, special purpose finishes and controls and tests. Also included in the book are 37 illustrations, 26 tables and 3 indexes.

Duct Recommendation

Stock list of pipe, ducts, and fittings for both gravity and forced air heating and air conditioning systems as well as sketches and dimensions for four types of take-off fittings for extended plenum systems are included in simplified practice recommendation R207-45, a revision of which is announced by Commodity Standards Division of National Bureau of Standards, Washington 25, D. C. Approved for promulgation, the recommendation is available from the Bureau.

How to Procure Tools

(Concluded from Page 89)

uilt, has several advantages.

Design and Build on Time and Material Basis—The same remarks regarding the preceding item of course apply in this case also.

Advantages of methods 3 and 4 are illustrated in Fig. 4, which shows the finished part. The customer required die to produce this part. His routing was to pierce and blank, in one compound die, then countersink on drill press.

To get the best design and engineering, this job was placed on a "time and material" basis. Taking the job under these conditions, it was not necessary for the tool designer to make the first idea and hurry through with it to meet a quoted price. Consequently the tool vendor was able to take the time to make layouts and to study the operations of the die. As a result, a progressive compound die to countersink, pierce and blank was designed, getting two complete parts at each stroke of the press. The drill press operation of countersinking was eliminated.

Tool cost increased 20 per cent. Production, however, increased over 1000 per cent, and with one less operation.

Practical conclusions for all concerned are as follows:

1. Have designs made on the time and material basis by very responsible vendors.
2. Have design layouts approved by your own man before detailing, and make him responsible.
3. Have as much detailing done, as will properly permit the toolmaker to build without his being required to spend time analyzing what is wanted. It saves costly toolmakers time. Detailers cost less than toolmakers, and they already know what it should be, or can find out.
4. Three quotations for building from a design properly made is a very satisfactory procedure. Quotes should be compared to purchaser's own estimate, as sometimes errors or misunderstandings by vendors may cause you to give it to someone who quoted too low, or too high. More than three quotes does not give a vendor sufficient opportunity to obtain a fair enough price or volume break on what he spends time to quote.

Building on time and material basis is the most satisfactory and the most economical for all concerned if the volume warrants, and the proper parties and conditions are set up.

CHANGE TO DIE CASTING-- WATCH YOUR PRODUCTION COSTS "NOSE DIVE" !



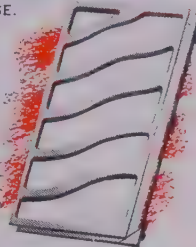
THE FIRST REQUIREMENT... DEPENDABLE H-P-M DIE CASTING MACHINES

To make money, you need die casting machines that are **VERSATILE**... machines that are **FAST**! That is why H-P-M all-hydraulic die casting machines "fill the bill". Take the H-P-M installation at Mid-Western Die Casting Company, Chicago, for example. Five H-P-Ms enable them to tackle any high pressure die casting job—even complicated parts like those illustrated. The money saving H-P-M features of quick die change-over, live hydraulic die closing, easy adjustments of speed and pressure really pay off here in stepped up production... lower costs... fewer rejects.

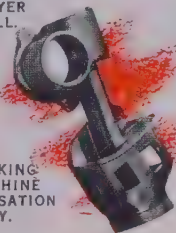
Why remove metal by chips, or employ antiquated casting methods, when you can do it the easy way? Whether you are a custom die caster, or one who "makes his own", you can't beat H-P-Ms for getting precision metal parts quick and at a reduced cost. Call in a nearby H-P-M engineer. Let him show you how die castings will give your production profits a boost.



AUTOMOTIVE
HEATER
BASE.



RECORD
PLAYER
GRILL.



MILKING
MACHINE
PULSATION
BODY.

THE HYDRAULIC PRESS MFG. COMPANY 1044 Marlon Road • Mount Gilead, Ohio, U. S. A.

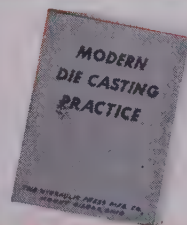
Branch Offices in New York, Detroit, Pittsburgh and Chicago.
Representatives in other principal cities. Export Dept: 500
Fifth Avenue, New York, N. Y. Cable "Hydraulic"

Just off the press—an authoritative article describing modern die casting practice. Write for your free copy today! Ask for Reprint No. ST-1.




All-Hydraulic
Self-Contained

DIE CASTING MACHINES



REVOLUTIONIZING PRODUCTION WITH HYDRAULICS SINCE 1877



Alliance

FIRST IN SIZE . . .
FIRST IN CRANE DESIGN



For fifty years, The Alliance Machine Company has been a leader in the designing, engineering and building of giant cranes for heavy industry. Many safety and mechanical features now accepted as standard practice in steel mill cranes, were first introduced by Alliance. In open hearth cranes, these features include interlocked drums, synchronized worm drive, 4-girder bridge construction, safety rope reeving and laminated ladle hooks. For increased safety, these hooks are equipped with universal joints at the top, permitting them to swing freely in any direction, thus preventing the hooks from bending and shearing rivets due to accidental collision.

The Alliance Machine Company has designed and built thousands of big cranes of all types to move heavy loads safely and economically. Give us an opportunity to solve your crane problems.

THE ALLIANCE MACHINE COMPANY
MAIN OFFICE: ALLIANCE BUILDING, PITTSBURGH, PA.
PITTSBURGH OFFICE: 1222 OLIVER BUILDING, PITTSBURGH, PA.

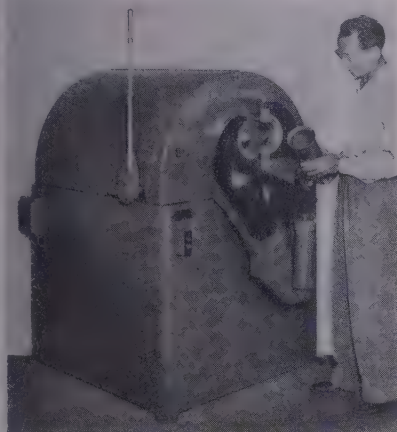
LADLE CRANES • GANTRY CRANES • FORGING MANIPULATORS • SOAKING PIT CRANES
STRIPPER CRANES • SLAB AND BILLET CHARGING MACHINES • OPEN HEARTH CHARGING MACHINES • SPECIAL MILL MACHINERY • STRUCTURAL FABRICATING

BIG
CRANES

New Products and Equipment

Tube Flaring Machine

Flaring, flanging, squaring and burring of either ferrous or nonferrous tubing may be accomplished in diameters from $\frac{1}{8}$ to 5 inches with the Tubemaster flaring machine, offered by the Leonard Precision Products Co., 10052 E. Larson Ave., Garden Grove, Calif. Adaptors are fur-



nished so that present users of the smaller capacity machine may utilize their present tools and dies.

Where required, tooling is also available for beading operations. Machine is powered with a 2 hp motor and varispeed drive. Giving a range of 70-550 rpm, for the handling of various materials.

Check No. 1 on Reply Card for more Details

Tool Room Lathe

Sixteen spindle speeds, increased horsepower capacities, several optional speed ranges give complete coverage for work requiring slow speeds for heavy cuts as well as high speeds for carbide tooling in the new model of engine lathes and tool room lathes offered by Springfield Machine Tool Co., Springfield, O. The three lever gear shifting system is designed without any pass through gears. Headstock lubrication oil sump is located in the cabinet leg to minimize heat rise of headstock under heavy high speed spindle operations. Feed box incorporates lifetime lubricated steel ball bearings wherever possible.

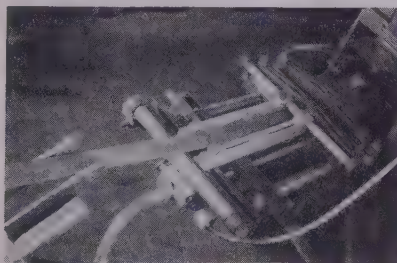
Sixty threads and feeds are available with optional ranges that include $11\frac{1}{2}$ and 27 pitch thread leads in addition to other standard pitches. Loose change gears are used only when transposing to metric thread leads or to obtain ranges of extremely

special nature. Heavy beds with either precision hand scraped bed ways or with replaceable hardened tool steel face way insets will be supplied as desired. Double cam actuated friction feed clutches assure positive engagement and disengagement of feeds.

Check No. 2 on Reply Card for more Details

Air Feed

Feeding of sheets, channels, bars, etc., in a wide range of thicknesses and widths may be accomplished with the Feedmaster air feed unit, made by Great Western Tools Inc., 3811 Riverside Dr., Burbank, Calif. The compact 50-pound unit may be easily attached to punch presses, drill presses, spot welders and other equipment, by drilling and tapping two holes in the edge of the bolster.



Length of feed can be adjusted to micrometer accuracy while unit is in operation.

Under normal shop air pressures, unit can be operated at 300 strokes per minute. Maximum stock thickness is $\frac{1}{4}$ -inch. Model F-3 takes maximum stock width of 8 inches, but capacity can be increased to 15 inches with an attachment.

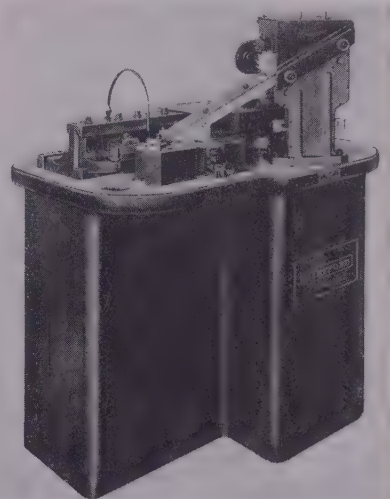
Check No. 3 on Reply Card for more Details

Thread Roller

From 120 to 150 pieces per minute may be produced on the model 190-H thread roller for machine screw sizes

from No. 2 to 10, announced by Hartford Special Machinery Co., Hartford 5, Conn. Thread length capacity is $\frac{1}{8}$ to $1\frac{1}{2}$ inches. Threads may be rolled on common screws, gimlet point and self-tapping screws, wood screws, socket head cap screws, etc.

Machine uses standard dies of the flat type. The dies can be adjusted while the machine is running to control the thread fit accuracy. Two

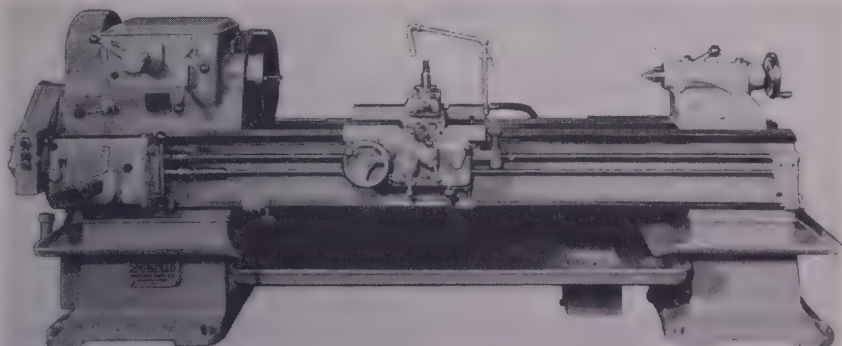


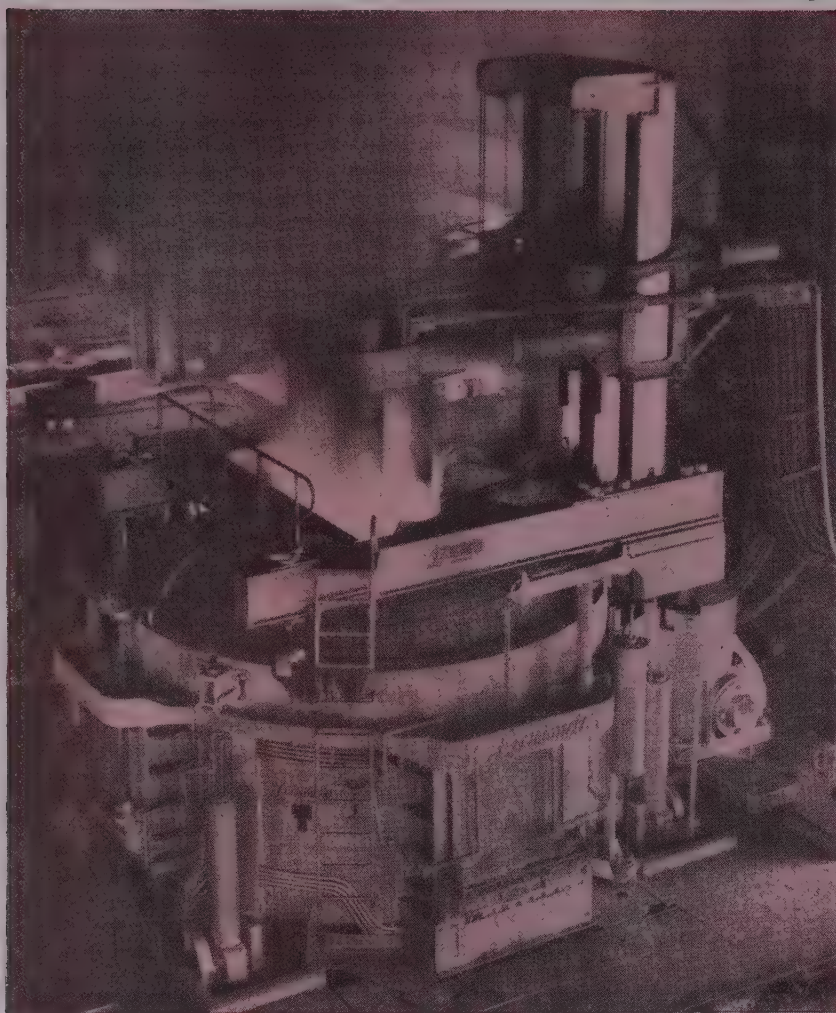
clamps hold the moving die and only one clamp holds the fixed die. Automatic hopper feed with notched clearing wheel, filtered lubrication system to all important parts which also supplies clean cutting oil to dies and requirement of 4 x 5 feet of floor space are other features.

Check No. 4 on Reply Card for more Details

Sheet Grab

Sheet metal or bundle material may be safely handled on overhead hoists with a fulcrum action sheet or bundle grab adjustable from 12 to 42 inches wide, manufactured by Rada Products Co., 2911 Carroll Ave., Chicago 12, Ill. Wide angle jaws permit clear-





The patented counterbalanced electrode arm control system with which this size KT Moore Rapid Lectromelt Furnace is equipped aids in rapid melting. The entire electrode arm, holder, electrode and cross head are counterbalanced by an over and under friction bite winch system which provides the most sensitive and rapid electrode movement, resulting in the smoothest possible operation of the electrode system and precisely accurate furnace control.

Lectromelt Furnaces are available in capacities ranging from 100 tons to 250 pounds. Complete details of all sizes are contained in the current catalog. Write for your copy today.

PITTSBURGH LECTROMELT FURNACE CORP.

PITTSBURGH 30, PA.

manufactured in: CANADA, Lectromelt Furnaces of Canada, Ltd., Toronto 2; ENGLAND, Birlec, Ltd., Birmingham; SWEDEN, Birlec Elektougner A/B, Stockholm; AUSTRALIA, Birlec Ltd., Sydney; FRANCE, Stein et Roubaix, Paris; BELGIUM, S. A. Belge Stein et Roubaix, Bressoux-Liege; SPAIN, General Electrica Espanola, Bilbao; ITALY, Forni Stein, Genoa.



ance of cross members on skids. A pile of steel or other sheet metal 10 inches high can be moved. Capacity of the grab is 3 tons.

The light weight, welded steel grab fits standard hoist hooks and can be operated by one man using the removable steering bars and remote control switch. Material handled

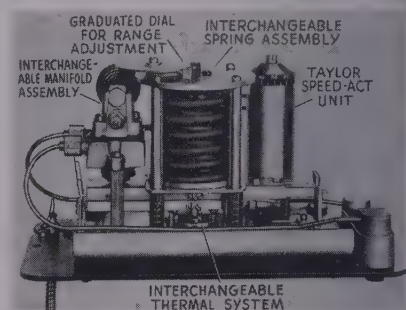


should be rectangular in shape. Chain sling is also available for transporting bundled shapes of every type. Two end hooks support sheet lengths up to 10 or 12 feet long and prevent slippage, even when the load is unbalanced.

Check No. 5 on Reply Card for more Details

Temperature Transmitter

Taylor Instrument Co., Rochester 1, N. Y., is announcing a force-balance type pneumatic temperature transmitter called the Transaire with Speed-Act, for applications where it is desirable to have indication, record



or control remotely located from the point of measurement. Unit is accurate, has high speed of response, small thermal elements and short range spans within the limits of minus 375 and plus 1000° F. It overcomes the lag present in the response of thermal measuring elements.

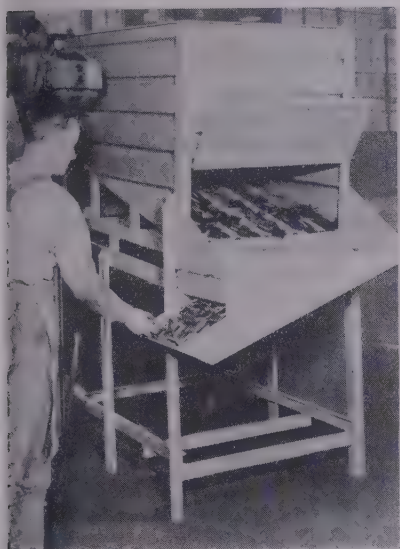
Employing force-balance principles, output of the transmitter in pounds per square inch is proportional to the temperature of its thermal element. By means of 1/4-inch copper tubing, this pressure change can be transmitted to a recording or controlling receiver located as far as 1000 feet away. Fixed air output range of 3 to 15 psi for full temperature span is linear to 0.1 per cent, assuring

repeatability of readings. Compensation for barometric and ambient temperature changes assures constantly accurate performance. Interchangeable unit assemblies make possible changing of overall operating limits. Thermal systems are built to withstand overrange temperatures up to 1000° F.

Check No. 6 on Reply Card for more Details

Sloped Bottom Box

Small parts may be handled with reduced labor costs with the sloped bottom box and stand announced by Palmer-Shile Co., 16025 Fullerton Ave., Detroit 27, Mich. Release of a hand lever located on the box permits the parts to slide down to



a waist-high tray on the stand for easy disposal by sitting or standing workmen.

Box is of all-steel construction and is equipped with crane lugs for pick-up and carry. Bottom slide opening is locked by the lever until released. Box is built to any size to fit any type lift truck, fork or platform.

Check No. 7 on Reply Card for more Details

Polishing Lathe

Economy in floor space is realized with the type VST polishing and buffing lathe, introduced by Divine Brothers Co., Utica 1, N. Y., which is made with two 3 hp or two 5 hp motors. By taking advantage of axial air gap motors, the lathe uses less floor space, yet is roomy enough for 2 men to operate. Machine base is of heavy welded steel. Magnetic starters are mounted behind the tray.

Automatic V-belt tension adjustment is built into the machine. Spindles, which are available with spindle brakes, run in two self-aligning,

How would **YOU** mark this test?

You have placed an order for heat treating. Would you prefer to accept:



a BAD JOB
a few hours *quicker*

a GOOD JOB
a few hours *later*

Obviously there is only one correct answer. Perhaps in other days, when "nearly good", or "looks O.K." would satisfy a client, the acceptance of a bad job a few hours quicker might have been standard practice. Today, with a hundred and one different kinds of steels requiring a hundred and one different treatments, it's suicide to accept a bad job a few hours quicker. Members of the METAL TREATING INSTITUTE, recognized as master craftsmen, prefer to do every job RIGHT, even if the original time estimate is a little short. "Nearly good" or "looks O.K." might meet a deadline, but work of this type

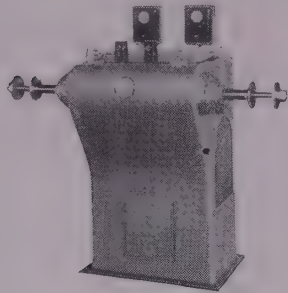
is bound to involve future loss. When you place heat treating jobs, be sure to place them with a member of MTI. Check on the member nearest to your place of business: you will find that his experience and skill—and advice—will save you money in the long run.



METAL TREATING INSTITUTE

420 LEXINGTON AVENUE, NEW YORK 17, N. Y.

grease lubricated ball bearings which are triple sealed to keep out dirt. Spindle speeds, changed by installing



new motor sheave, range from 800 to 3600 rpm in 200 rpm steps. Check No. 8 on Reply Card for more Details

CLEANING COMPOUND: A cleaning bath for aluminum parts that are heavily coated with polishing composition is announced by North-West Chemical Co., Detroit 4, Mich. Bath is composed of 2 to 4 ounces per gallon of Alkalume No. 1 plus 2 per cent by volume of liquid stripper No. 2.

Check No. 9 on Reply Card for more Details

CONTROL: Delayed action photo-electric control type 20DA4 has been designed by Photoswitch Inc., Cambridge 42, Mass., to indicate the presence of a jam of cases or cartons on conveyor lines and to introduce conveyor stop motion or other correction.

Check No. 10 on Reply Card for more Details

CORE DRILL CUTTER: Scully-Tones & Co., Chicago, Ill., announces a new core drill cutter that is available in 25 different sizes from 1½ to 3 inches in cutter diameter. Only four holders are needed for the entire series of 25 sizes of cutters.

Check No. 11 on Reply Card for more Details

PAPERBOARD: Robert Gair Co. Inc., New York, N. Y., has developed Puf-Bord which is particularly suitable for packing durable goods such as hardware and machine parts, heavy articles and light materials where stacking strength is desired.

Check No. 12 on Reply Card for more Details

RATCHET WRENCH: Favorite deluxe reversible ratchet wrench, introduced by Greene, Tweed & Co., North Wales, Pa., is designed so that wrench takes load with all working parts in compression. It features synthetic rubber retaining ring; one-piece built-in pawl for instant reversal of wrench direction and angle set of pawl and socket teeth for sure clutch fit. Available with 15, 24 and 27-inch handles;

sockets to accommodate American Standard heavy nuts from ¼ to 1½-inch bolt sizes.

Check No. 13 on Reply Card for more Details

FOOT VALVES: A change in the design of model F and R Nopak foot valves eliminates the internal exhaust core of the valve disk. Both cylinder and exhaust ports are located on flat top surface of the valve made by Galland-Henning Mfg. Co., Milwaukee 7, Wis. They may be used as two-way shut-off valves or three-or-four-way operating valves.

Check No. 14 on Reply Card for more Details

SIGNAL SYSTEMS: Panalarms, manufactured by Panalarm Products Inc., Chicago 26, Ill., are multiple signal and alarm systems for application where sound and visual alarms are required to indicate failure or changes off normal. They are designed to make possible safety shut-downs, sequencing or interlocking of plant operations.

Check No. 15 on Reply Card for more Details

WIRE FILTER CLOTH: A new wire filter cloth made of Hastelloy which provides resistance to severe chemical corrosion is announced by John A. Roebling's Sons Co., Trenton 2, N. J. It is resistant to such oxidizing agents as ferric chloride and wet chlorine. Two different grades of filter cloth are offered.

Check No. 16 on Reply Card for more Details

GRINDING WHEEL: Mid-West Abrasive Co., Owosso, Mich., announces a new self-dressing, centerless grinding wheel. It is cool cutting and made with a special tempered abrasive.

Check No. 17 on Reply Card for more Details

PROJECTOR: A tri-purpose projector, designed to handle slidefilm only, 2 x 2 inch slides or both slides and slidefilm, is announced by American Optical Co., Buffalo, N. Y. Three objectives in the following focal lengths and "f" values are available: 5 inch-f 3.75, 3½ inches-f 3.5, and 7 inches-f 3.65.

Check No. 18 on Reply Card for more Details

WORK BENCH: Equipto, division of Aurora Equipment Co., Aurora, Ill., announces a new streamlined steel work bench with a 12 gage steel top. It is 6 feet long, 34 inches high and 28 inches deep. Electrical knockouts for double outlets are provided in front of each leg just below the top.

Check No. 19 on Reply Card for more Details

ARC WELDER: Lincoln Electric Co., Cleveland 1, O., announces a small arc welder, operating off a 110 v light circuit for repairing and fab-

ricating in light gage metals. With a maximum output of 60 amp, the Linwelder 60 can also be used for joining heavier materials such as strap, pipe, tubing, angle and other shapes as well as for cutting metals, soldering and making wire connections, brazing, heating for bending and with a small rectifier, and for battery charging.

Check No. 20 on Reply Card for more Details

LIQUID RESIN: G-E Permafil, developed by General Electric Co.'s Chemical Department, Pittsfield, Mass., is a liquid resin for sealing porous, light metal castings. A polyester-type resin, it converts to a tough, clear, solid, free of voids, through the action of catalysts and heat. Castings are sealed by vacuum impregnation and a short bake.

Check No. 21 on Reply Card for more Details

HELMET: Purair helmet, made by W. W. Sly Mfg. Co., Cleveland 2, O., is for the protection of sandblast operators against the inhalation of dust as well as for protection against rebounding abrasive. It is light in weight and has a wide range of vision and freedom of head movement.

Check No. 22 on Reply Card for more Details

SEALING MATERIAL: A new material, composition No. 38, which produces a dense foam on acid pickling solutions and seals in evolved gases, has been introduced by Oakite Products Inc., New York, N. Y. It forms a dense foam blanket on nitric-hydrofluoric, hydrochloric and sulphuric acid solutions to provide a seal against escape of fumes.

Check No. 23 on Reply Card for more Details

WELD NUTS: Johnson Weldnuts, made by Lamson & Sessions Co., Cleveland, O., have welding projections cold-formed by a patented process. Depressions adjacent to welding lugs provide a relief area into which any excess material can flow under heat and pressure. They are made to American standard regular outside dimensions ranging in bolt sizes from ¼-inch through ⅝-inch diameters inclusive, in either coarse or fine thread.

Check No. 24 on Reply Card for more Details

FOR MORE INFORMATION

on the new products and equipment in this section, fill in a card. It will receive prompt attention.

THREATENED strike in the steel industry, now more than just a subject for speculation, is serving to intensify uncertainty in the steel markets. Walkout of the steelworkers looms menacingly as result of the deadlocking of collective bargaining conferences between U. S. Steel subsidiaries and the United Steelworkers of America (CIO). In event a strike is called 189 companies and over 500,000 workmen will be involved immediately. The number will increase as contracts with other companies expire.

OUTLOOK—Whether there will be actual work stoppage in the mills over the next week or so still is uncertain. The union's future course will be determined July 12 when its Wage Policy Committee meets. However, under its contract with the steel companies it can call a strike in event there is no agreement on the issues raised by July 16. Consequently, since U. S. Steel has turned down the union's demands a strike would seem to be in the cards. Still, the hope is held out that President Truman may step in, effect a meeting between industry and union representatives aimed at extending present collective bargaining conferences for 60 or 90 days during which time the strike would be held in abeyance.

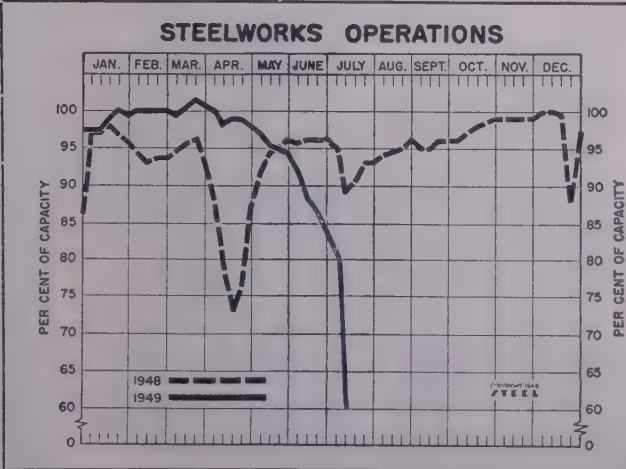
PRODUCTION—Meanwhile steelmaking operations last week slumped 20 points to only 60 per cent of rated national ingot capacity. This is the lowest rate recorded since mid-1946. Last week's drop was due chiefly to plant shutdowns in observance of the July 4 holiday, but it also reflected mass vacations in both steel producing and consuming plants, and slackening demand for steel products generally. Ingot production at 60 per cent of capacity is equivalent to output of about 1,106,000 net tons of steel. A month ago weekly ingot output was running at a rate of 1,642,600 tons, and a year ago at 1,627,600 tons. Producers last week were planning to restore to the active list some furnace

and rolling capacity idled over the holiday week. Extent of recovery, of course, hinges upon whether a strike is called in the industry July 16.

DEMAND—With many consuming plants down for vacation periods pressure for steel shipments is off noticeably. Here and there reports are heard of a slight pickup in ordering for inventory where consumers had let stocks drop to the danger point. Such instances, however, are exceptional and are not indicative of a trend with many consumers still living off stocks. Spotty buying still is the dominant characteristic of the market. For all practical purposes supply-demand balance has been achieved in steel.

PRICES—The markets are virtually without feature pricewise. Consumers continue to look for downward adjustments but no sign has yet come from the steelmakers of any general revision. In view of the uncertainties attending wage negotiations it seems unlikely any price action will be taken until the wage matter is definitely disposed of. Most premium prices have disappeared but no shading of standard prices, or waiving of extras has been reported. Last week one producer effected a reduction of approximately 30 per cent in polishing extras on stainless steel sheets, and this action is expected to be followed by other sellers. Scrap demand continues stagnant with prices off.

COMPOSITES—STEEL's composite on steel-making scrap dropped for the sixth consecutive time last week, reaching the old OPA ceiling of \$19.17 which prevailed from April, 1941, to mid-November, 1946. Last week's scrap composite compared with \$19.50 the previous week and \$40.67 in the like week a year ago. Other composites held unchanged from the preceding week and compared with the like week a year ago as follows: Finished steel, \$91.82 and \$80.27; semifinished steel, \$63.12 and \$68.62; steelmaking pig iron, \$45.60 and \$40.49.



DISTRICT STEEL RATES

Percentage of Ingot Capacity engaged in Leading Districts		Week Ended July 9		Same Week	
		Change	1948	1947	
Pittsburgh	55	-21.5*	79.5	90.5	
Chicago	68.5	-25	88	92	
Eastern Pa.	68	-6	85	92	
Youngstown	50	-40	94.5	55	
Wheeling	68	-2.5	81.5	78	
Cleveland	62	-17.5*	97.5	75.5	
Buffalo	85	None	101	88.5	
Birmingham	100	None	100	99	
New England	38	+ 8	82	83	
Cincinnati	72	-27	102	84	
St. Louis	75.5	- 7.5	78	84.5	
Detroit	88	-18	101	92	
Western	79.5	- 2	..	..
Estimated national rate	60	-20	89	87	

Based on weekly steelmaking capacity of 1,843,516 net tons for 1949; 1,802,476 net tons for 1948; 1,749,928 tons for 1947.

COMPOSITE MARKET AVERAGES

Arithmetical Price Composites*

	July 9	July 2	Month Ago June 1949	Year Ago July 1948	5 Years Ago July 1944
Finished Steel	\$91.82	\$91.82	\$92.06	\$80.27	\$56.73
Semifinished Steel	63.12	63.12	65.28	68.62	36.00
Steelmaking Pig Iron	45.60	45.60	45.60	40.49	23.00
Steelmaking Scrap	19.17	19.50	20.85	40.67	19.17

* **STRAIGHT ARITHMETICAL COMPOSITES:** Computed from average industry-wide mill prices on Finished Carbon Steel (hot-rolled sheets, cold-rolled sheets, cold-rolled strip, hot-rolled bars, plates, structural shapes, basic wire, standard nails, tin plate, standard and line pipe), on Semifinished Carbon Steel (re-rolling billets and slabs, sheet bars, skelp, and wire rods), on Basic Pig Iron (at eight leading producing points), and on Steelworks Scrap (No. 1 melting grade at Pittsburgh, Chicago and eastern Pennsylvania). Steel arithmetical composites, dollars per net ton; pig iron and scrap, gross ton.

† **FINISHED STEEL WEIGHTED COMPOSITE:** Computed in cents per pound, mill prices, weighted by actual monthly shipments of following products, representing about 82 per cent of steel shipments in the latest month for which statistics are available, as reported by American Iron & Steel Institute: Structural shapes; plates, standard rails; hot and cold-finished carbon bars; black butt weld pipe and tubes; black lap weld pipe and tubes; black electric weld pipe and tubes; black seamless pipe and tubes; drawn wire; nails and staples; tin and terne plate; hot-rolled sheets; cold-rolled sheets; galvanized sheets; hot-rolled strip; and cold-rolled strip, May, 1949, figure is preliminary.

FINISHED STEEL WEIGHTED COMPOSITE†	
May 1949	3.98873c
Apr. 1949	4.02031c
Mar. 1949	4.05098c
May 1948	3.58321c
May 1944	2.44428c

COMPARISON OF PRICES

Representative market figures for current week; average for last month, three months and one year ago. Finished material (except tin plate) and wire rods, cents per lb; semifinished (except wire rods) and coke, dollars per net ton, others dollars per gross ton. Delivered prices represent lowest from mills.

Finished Materials

	July 9, 1949	June, 1949	Apr., 1949	July, 1948
Steel bars, Pittsburgh mills.....	3.35c	3.35c	3.35c	3.105c
Steel bars, del. Philadelphia.....	3.8164	3.8164	3.8164	3.545
Steel bars, Chicago mills.....	3.35	3.35	3.35	3.065
Shapes, Pittsburgh mills.....	3.25	3.25	3.25	2.975
Shapes, Chicago mills.....	3.25	3.25	3.25	2.965
Shapes, del. Philadelphia.....	3.4918	3.4918	3.4918	3.18
Plates, Pittsburgh mills.....	3.40	3.40	3.50	3.155
Plates, del. Philadelphia.....	3.5848	3.5848	3.6348	3.41
Sheets, hot-rolled, Pittsburgh mills	3.25	3.25	3.26	2.975
Sheets, No. 10 galv., Pittsburgh...	4.00	4.00	4.00	3.70
Sheets, hot-rolled, Gary mills.....	4.40	4.40	4.40	4.10
Sheets, cold-rolled, Gary mills.....	3.25	3.25	3.25	2.965
Sheets, No. 10 galv., Gary mills.....	4.00	4.00	4.00	3.70
Strip, hot-rolled, Pittsburgh mills...	3.25	3.25	3.50	3.140
Strip, cold-rolled, Pittsburgh mills...	4.375	4.375	4.375	3.965
Bright basic, wire, Pittsburgh.....	4.15	4.15	4.15	3.965
Wire nails, Pittsburgh mills.....	5.15	5.15	5.15	5.255
Tin plate, per base box, Pitts. dist.	\$7.75†	\$7.75†	\$7.75†	\$6.74

Semifinished

	July 9, 1949	June, 1949	Apr., 1949	July, 1948
Sheet bars, mill	\$67.00*	\$67.00*	\$67.00*	\$62.80
Slabs, Chicago	52.00	52.00	52.00	47.80
Re-rolling billets, Pittsburgh.....	52.00	52.00	52.00	47.80
Wire rod $\frac{3}{8}$ to $\frac{1}{2}$ -inch, Pitts. dist.,	3.40c	3.40c	3.775c	3.415c

* Nominal. † 1.50 lb coating.

Pig Iron

	July 9, 1949	June, 1949	Apr., 1949	July, 1948
Bessemer, del. Pittsburgh (N.&S. sides)	\$48.08	\$48.08	\$48.08	\$44.08
Basic, Valley	46.00	46.00	46.00	40.60
Basic eastern, del. Philadelphia.....	49.39	49.39	49.6175	43.77
No. 2 fdry., del. Pgh. (N.&S. sides)	47.58	47.58	47.58	43.58
No. 2 fdry., del. Philadelphia.....	49.89	49.89	50.1175	44.27
No. 2 foundry, Chicago.....	46.25	46.25	46.25	41.10
No. 2 foundry, Valley.....	46.50	46.50	46.50	40.72
Southern No. 2 Birmingham.....	39.38	39.38	43.38	46.43
Southern No. 2 del. Cincinnati.....	45.43	45.43	49.43	46.43
Malleable, Valley	46.50	46.50	46.50	40.30
Malleable, Chicago	66.00	66.00	66.00	59.60
Charcoal, low phos., fob Lyles, Tenn.	175.00	175.00	175.00	150.00
Ferromanganese, f.o.b. Etna, Pa. ..	175.00	175.00	175.00	150.00

SCRAP

	July 9, 1949	June, 1949	Apr., 1949	July, 1948
Heavy melt. steel, No. 1, Pittsburgh	\$21.00	\$23.60	\$25.12	\$40.75
Heavy melt. steel, No. 2, E. Pa. ...	16.00	17.75	20.69	40.00
Heavy melt. steel, No. 1, Chicago...	19.50	20.70	23.75	40.05
Heavy melt. steel, No. 1 Valley.....	18.50	21.30	22.75	40.75
Heavy melt. steel, No. 1 Cleveland...	15.00	17.80	20.38	40.25
Heavy melt. steel, No. 1, Buffalo...	19.25	20.35	24.38	44.30
Rails for re-rolling, Chicago.....	27.75	27.75	31.31	57.80
No. 1 cast, Chicago.....	27.50	27.50	30.25	68.50

COKE

	July 9, 1949	June, 1949	Apr., 1949	July, 1948
Connellsville, beehive furnace.....	\$13.25	\$13.70	\$14.44	\$14.25
Connellsville, beehive foundry	15.75	16.15	17.00	17.00
Chicago, oven foundry, ovens.....	20.00	20.24	20.40	19.86

FINISHED AND SEMIFINISHED IRON, STEEL PRODUCTS

Finished steel quoted in cents per pound and semifinished in dollars per net ton, except as otherwise noted. Prices apply on an individual producer basis to products within the range of sizes, grades, finishes and specifications produced at its plants.

Semifinished Steel

Carbon Steel Ingots: Re-rolling quality, standard analysis, nominal. Forging quality, \$50 per net ton mill.

Alloy Steel Ingots: \$51 per net ton, mill.

Re-rolling Billets, Blooms, Slabs: \$52 per net ton, mill, except: \$57, Conshohocken, Pa.; \$71, Fontana, Calif.

Forging Quality Billets, Blooms, Slabs: \$61 per net ton, mill, except: \$63, Conshohocken, Pa.; \$80, Fontana, Calif.

Alloy Billets, Slabs, Blooms: Re-rolling quality, \$63 per net ton, mill except: \$65 Conshohocken, Pa.; \$82, Fontana, Calif.

Sheet Bars: Nom., per net ton, mill; sales in open market \$55-\$60 per gross ton.

Skelp: 3.25c per lb, mill.

Tube Rounds: \$76 per net ton, mill.

Wire Rods: Basic and acid open-hearth, 7/32 & $\frac{1}{2}$ -inch, inclusive, 3.40c per lb, mill, except: 3.70c, Worcester, Mass.; 4.05c, Pittsburgh, Calif.; 4.10c, Los Angeles. Basic open-hearth and bessemer, 7/32 to 47/64-in., inclusive, 3.50c, Sparrows Point, Md.

Bars

Hot-Rolled Carbon Bars (O.H. only; base 20 tons): 3.35c, mill, except: 3.50c Atlanta; 3.55c, Ecorse, Mich.; 3.75c, Houston; 3.95c, Kansas City; 4.00c, Fontana, Calif.; 4.05c, Pittsburgh, Torrance, Calif.; 4.10c, S. San Francisco, Los Angeles, Niles, Calif.; Portland, Oreg.; Seattle; 4.25c, Minnequa, Colo.

Rail Steel Bars: (Base 10 tons): 3.35c Huntington, W. Va., and Moline, Ill.; 4.00c, Williamsport, Pa.

Hot-Rolled Alloy Bars: 3.75c, mill, except: 4.05c, Ecorse, Mich.; 4.80c, Los Angeles; 4.75c, Fontana, Calif.

Cold-Finished Carbon Bars (Base 40,000 lb and over): 4.00c, mill, except: 3.95c, Pittsburgh, Cumberland, Md.; 4.20c, Indianapolis; 4.30c, Ecorse, Mich.; 4.35c, St. Louis; 4.36c, Plymouth, Mich.; 4.40c Newark, N. J.; Hartford, Putnam, Conn.; Mansfield, Readville, Mass.; 4.48c, Camden, N. J.; 5.40c, Los Angeles.

Cold-Finished Alloy Bars: 4.65c, mill, except: 4.85c, Indianapolis; 4.95c, Worcester, Mansfield, Mass., Hartford, Conn.

High-Strength, Low-Alloy Bars: 5.10c, mill, except: 5.30c, Ecorse, Mich.

Reinforcing Bars (New Billet): 3.35c, mill, except: 3.50c, Atlanta; 4.00c, Fontana, Calif.; 3.75c, Houston; 3.95c, Kansas City; 4.05c, Pittsburgh, Torrance, Calif.; 4.10c, Seattle, S. San Francisco, Los Angeles; 4.25c, Minnequa, Colo. Fabricated: To consumers: 4.25c, mill, except: 5.00c, Seattle.

Reinforcing Bars (Rail Steel): 3.85c, Williamsport, Pa., mill; 3.35c, Huntington, W. Va.

Wrought Iron Bars: Single Refined: 8.60c, (hand puddled), McKees Rocks, Pa.; 9.50c, Economy, Pa. Double Refined: 11.25c (hand puddled), McKees Rocks, Pa.; 11.00c, Economy, Pa. Staybolt: 12.75c, (hand puddled), McKees Rocks, Pa.; 11.30c, Economy, Pa.

Sheets

Hot-Rolled Sheets (18-gage and heavier): 3.25c, mill, except: 3.45c, Ecorse, Mich.; 3.65c, Houston; 3.35c, Conshohocken, Pa.; 3.95c, Pittsburgh, Torrance, Calif.; 4.15c, Fontana, Calif.

Hot-Rolled Sheets (19 gage and lighter, annealed): 4.15c, mill, except: 4.40c, Alabama

City, Ala.; 5.05c, Torrance, Calif.; 5.25c, Kokomo, Ind.

Cold-Rolled Sheets: 4.00c, mill, except: 4.20c, Ecorse, Mich.; Granite City, Ill.; 4.90c, Fontana, Calif.; 4.95c, Pittsburgh, Calif.

Galvanized Sheets, No. 10: (Based on 5 cent zinc) 4.40c, mill, except: 4.80c, Kokomo, Ind.; 5.15c, Pittsburgh, Torrance, Calif.

Galvannealed Sheets: 4.95c, mill, except: 5.30c, Kokomo, Ind.

Culvert Sheets, No. 16 flat Copper Steel (based on 5-cent zinc): 5.00c, mill, except: 5.40c, Granite City, Ill.; Kokomo, Ind.; 5.75c, Pittsburgh, Torrance, Calif.

Long Terns, No. 10 (Commercial quality): 4.80c, mill.

Enameling Sheets, No. 12: 4.40c mill, except: 4.60c Granite City, Ill.; 4.70c, Ecorse, Mich.

Silicon Sheets, No. 24: Field: 5.15c, mill. Armature: 5.45c, mill, except: 5.95c, Warren. Electrical: Hot-rolled, 5.95c, mill, except: 6.05c, Kokomo, Ind.; 6.15c, Granite City, Ill.; 6.45c, Warren, O.

Motor: 6.70c mill, except: 6.90c, Granite City, Ill.; 7.20c, Warren, O.

Dynamo: 7.50c, mill, except: 7.70c, Granite City, Ill.

Transformer 72, 8.05c, mill; 65, 8.60c, mill, 58, 9.30c, mill, 52, 10.10c, mill.

High-Strength Low-Alloy Sheets: Hot-rolled, 4.95c, mill, except: 5.15c, Ecorse, Mich. Galvanized (No. 10), 6.75c, mill. Cold-rolled, 6.05c, mill, except: 6.25c, Ecorse, Mich.

Strip

Hot-Rolled Strip: 3.25c mill, except: 3.40c, Atlanta; 3.45c, Ecorse, Mich.; 3.60c, Detroit; 3.65c, Houston; 3.85c, Kansas City, Mo.; 4.00c, Pittsburgh, Torrance, Calif.; 4.25c, Seattle, San Francisco, Los Angeles; 4.30c, Minneapolis, Colo.; 4.40c, Fontana, Calif. One company quotes 4.90c, Pittsburgh base.

Cold-Rolled Strip (0.25 carbon and less): 4.00c, mill, except: 4.00-4.25c, Warren, O.; 4.15c, Riverdale, Ill.; 4.20c, Ecorse, Mich.; 4.20-4.25c, Detroit; 4.25c, Dover, O.; 4.50c, New Haven, Conn.; Boston; 4.50-5.00c, Trenton, N. J.; 4.90c, Fontana, Calif.; 5.75c, Los Angeles. One company quotes 4.55c, Cleveland or Pittsburgh base, and 4.75c, Worcester, Mass., base; two companies quote 4.50c, New York base.

Cold-Finished Spring Steel: 0.26-0.40 C, 4.00c, mill, except: 4.25c, Dover, O.; Chicago; 4.30c, Worcester, Mass.; 4.50c, Boston, Youngstown, Wallingford, Conn. Over 0.40 to 0.60 C, 5.50c, mill except: 5.65c, Chicago; 5.75c, Dover, O.; 5.80c, Worcester, Mass.; Wallingford, Conn.; Trenton, N. J.; 5.95c, Boston. Over 0.60 to 0.80 C, 6.10c, mill, except: 6.25c, Chicago; 6.35c, Dover, O.; 6.40c, Worcester, Mass.; Wallingford, Bristol, Conn.; Trenton, N. J. Over 0.80 to 1.05 C, 8.05c, mill, except: 7.85c, Dover, O.; 8.20c, Chicago; 8.35c, Worcester, Mass.; Bristol, Conn.; Trenton and Harrison, N. J. Over 1.05 to 1.35 C, 10.35c, mill, except: 10.15c, Dover, O.; 10.50c, Chicago; 10.65c, Worcester, Mass.; Trenton and Harrison, N. J.

Cold-Rolled Alloy Strip: 9.50c, mill except: 9.80c, Worcester, Mass.

High-Strength, Low-Alloy Strip: Hot-rolled, 4.95c, mill, except: 5.15c, Ecorse, Mich. Cold-rolled, 6.05c, mill, except: 6.25c, Ecorse, Mich.

Tin, Terne, Plate

Tin Plate: American Coke, per base box of 100 lb, 1.25 lb coating \$7.50-\$7.70; 1.50 lb coating \$7.75-\$7.95. Pittsburgh, Calif., mill \$8.25 and \$8.50, respectively, for 1.25 and 1.50 lb coatings.

Electrolytic Tin Plate: Per base box of 100 lb, 0.25 lb tin, \$6.45-\$6.65; 0.50 lb tin, \$6.70-\$6.90; 0.75 lb tin, \$7.00-\$7.20.

Can Making Black Plate: Per base box of 100 lb, 55 to 128 lb basis weight \$5.75-\$5.85. Pittsburgh, Calif., mill, \$6.50.

Holloware Enameling Black Plate: 29-gage, 5.30c per pound, except: 5.40c, Sparrows Point, Md.; 5.50c, Granite City, Ill.

Manufacturing Terns (Special Coated): Per base box of 100 lb, \$6.65, except: \$6.75 Fairfield, Ala., Sparrows Point, Md.

Roofing Terns: Per package 112 sheets; 20 x 28 in., coating I.C. 8-lb, \$17.50.

Plates

Carbon Steel Plates: 3.40c, mill, except: 3.50c, Coatesville, Pa.; Claymont, Del.; Conshohocken, Pa.; Harrisburg, Pa.; 3.65c, Ecorse, Mich.; 3.80c, Houston; 4.00c, Fontana, Calif.; 4.30c, Seattle, Minneapolis, Colo.; 6.25c, Kansas City, Mo.

Floor Plates: 4.55c, mill.

Open-Hearth Alloy Plates: 4.40c, mill, except: 4.50c, Coatesville, Pa., mill.

High-Strength, Low-Alloy Plates: 5.20c mill, except: 5.40c, Ecorse, Mich.

Shapes

Structural Shapes: 3.25c, mill, except: 3.30c, Bethlehem, Johnstown, Pa.; Lackawanna, N. Y.; 3.65c, Houston; 3.80c, S. San Francisco, Fontana, Calif.; 3.85c, Kansas City, Mo.; Torrance, Calif.; 4.15c, Minneapolis, Colo.; 4.30c, Seattle, Los Angeles.

Alloy Structural Shapes: 4.05c, mill.

Steel Sheet Piling: 4.05c, mill.

High-Strength, Low-Alloy Shapes: 4.95c, mill, except: 5.05c, Bethlehem, Johnstown, Pa.; Lackawanna, N. Y.

Wire and Wire Products

Wire to Manufacturers (carloads): Bright, Basic or Bessemer Wire, 4.15c, mill, except: 4.25c, Sparrows Point, Md.; Kokomo, Ind.; 4.45c, Worcester, Mass.; 4.50c, Minneapolis, Colo.; Atlanta, Buffalo; 4.75c, Kansas City Mo.; 4.80c, Palmer, Mass.; 5.10c, Pittsburgh, Calif.; 5.15c, S. San Francisco. One producer quotes 4.15c, Chicago base; another 4.50c, Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Basic MB Spring Wire, 5.55c, mill, except: 5.65c, Sparrows Point, Md.; 5.85c, Worcester, Palmer, Mass., Trenton, N. J.; 6.50c, Pittsburgh, Calif.

Upholstery Spring Wire, 5.20c mill, except: 5.30c, Sparrows Point, Md.; Williamsport, Pa.; 5.50c, Worcester, Mass., Trenton, N. J., New Haven, Conn.; 6.15c, Pittsburgh, Calif.

Wire Products to Trade (carloads): Merchant Quality Wire: Annealed (6 to 8 Gage base), 4.80c, mill except: 4.90c, Sparrows Point, Md.; Kokomo, Ind.; 4.95c, Atlanta; 5.10c, Worcester, Mass.; 5.15c, Minneapolis, Colo.; 5.75c, S. San Francisco, Pittsburgh, Calif. One producer quotes 4.80c, Chicago and Pittsburgh base; another, 5.20c, Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Galvanized (6 to 8 Gage base), 5.25c, mill, except: 5.35c, Sparrows Point, Md.; Kokomo, Ind.; 5.40c, Atlanta; 5.55c, Worcester, Mass.; 5.60c, Minneapolis, Colo.; 6.20c, Pittsburgh, S. San Francisco, Calif. One producer quotes 5.25c, Pittsburgh and Chicago base; another, 5.65c, Crawfordsville, Ind., freight equalized with Birmingham and Pittsburgh.

Nails and Staples: Standard, cement-coated and galvanized nails and polished and galvanized staples, Col. 103, mill, except: 105, Sparrows Point, Md.; Kokomo, Ind.; Atlanta; 109, Worcester, Mass.; 110, Minneapolis, Colo.; Cleveland; 123, Pittsburgh, Calif. One producer quotes Col. 103, Chicago and Pittsburgh base; another, Col. 113, Crawfordsville, Ind.; 111 Houston, freight equalized with Birmingham and Pittsburgh.

Woven Fence (9 to 15½ Gage, inclusive): Col. 109, mill, except: 111, Kokomo, Ind.; Atlanta; 116, Minneapolis, Colo.; 132, Pittsburgh, Calif. One producer quotes Col. 109, Pittsburgh and Chicago base; another, Col. 114, Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Barbed Wire: Col. 123 mill, except: 125, Sparrows Point, Md.; Kokomo, Ind.; Atlanta; 130, Minneapolis, Colo.; 143, Pittsburgh, Calif.; 145, S. San Francisco. One producer quotes Col. 123, Chicago and Pittsburgh base.

Fence Posts (with clamps): Col. 114, Duluth; 121, Moline, Ill.; 122, Minneapolis, Colo.; 125, Johnstown, Pa.; \$120 per net ton, Williamsport, Pa.

Bale Ties (single loop): Col. 106, mill, except: 107, Atlanta; 108, Sparrows Point, Md.; Kokomo, Ind.; 113, Minneapolis, Colo.; 130, S. San Francisco, Pittsburgh, Calif. One producer quotes Col. 115, Crawfordsville, Ind., freight equalized with Birmingham and Pittsburgh.

Stainless Steels

(Mill prices, cents per pound)

CHROMIUM NICKEL STEELS

Type No.	Bars, Wire Shapes	Strip, Cold-Rolled	Sheets
301.....	28.50	30.50	37.50
302.....	28.50	33.00	37.50
303.....	31.00	36.50	39.50
304.....	30.00	35.00	39.50
316.....	46.00	55.00	53.00
321.....	34.00	44.50	45.50
347.....	38.50	48.50	50.00

STRAIGHT CHROMIUM STEELS

410.....	23.00	27.00	33.00
416.....	25.50	33.50	33.50
420.....	25.50	43.50	40.50
430.....	23.50	27.50	35.50
442.....	27.00	39.00	39.50
446.....	32.50	60.00	50.00

STAINLESS-CLAD STEELS

	Plates		Sheets	
	Cladding—	20%	Cladding—	20%
302.....	.....	.....	19.75	21.50
304.....	22.50	26.50	20.75	22.50
310.....	32.50	36.50	.....	.....
316.....	27.00	31.00	26.00	28.00
321.....	23.50	27.50	.....	.....
347.....	25.00	29.00	24.00	26.00
405.....	18.75	24.75	.....	.....
410.....	18.25	24.25	.....	.....
430.....	18.25	24.25	.....	.....

Tool Steels

Tool Steel: Cents per pound, producing plants; reg. carbon 19.00c; extra carbon 22.00c; special carbon 26.50c; oil-hardening 29.00c; high carbon-chromium 52.00c; chrome hot work, 29.00c.

W	Cr	V	Mo	Co	Base Per lb
18	4	1	.....	.....	90.50c
18	4	2	.....	.....	102.50c
18	4	3	.....	.....	114.50c
18	4	2	.....	9	168.50c
1.5	4	1	8.5	.....	65.00c
6.4	4.5	1.9	5	.....	69.50c
6	4	3	6	.....	88.00c

For prices of bolts, nuts, rivets and washers please refer to June 20 issue, Page 155.

Tubular Goods

Standard Steel Pipe: Eastern mill carlot prices, threaded and coupled, to consumers about \$200 a net ton. Discounts from base:

Butt Weld			In.		
In.	Blk.	Gal.	In.	Blk.	Gal.
½.....	39½	11-	1.....	46½	30½-
¾.....	41½	13½	1½.....	48½	33½-
1.....	37½	13-	2.....	47	31-
1½.....	39½	15½	2½.....	49	34
2.....	34-	9½-	3.....	47½	31½-
2½.....	36	12½	3½.....	49½	34½-
3.....	41-	23½	4.....	48-	32-
3½.....	43	26½	4½.....	50	35
4.....	44	27½	5.....	48½	32½-
4½.....	46	30½	5½.....	50½	35½-
			6.....	44½	29

Lap Weld			Elec. Weld		
In.	Blk.	Gal.	In.	Blk.	Gal.
2.....	40½	25	38½	23	28-
2½.....	44½	29	41½	26	33½-
3.....	44½	29	41½	26	31½-
3½&4	42½-	26-	43½	28	38½-
5 & 6	44½-	26-	43½	28	43½
7.....	44½	29	43½	28	43½

Line Steel Pipe: Mill prices in carlots to consumers about \$200 a net ton.

Butt Weld			Butt Weld		
In.	Blk.	Gal.	In.	Blk.	Gal.
½.....	40½	12½	1½.....	46-	32-
¾.....	38½	14½	2.....	48	33
1.....	35	11½	2½.....	46½-	32½-
1½.....	40-	24½-	3.....	48½	33½-
2.....	42	25½	3½.....	47-	33
2½.....	43-	28½-	4.....	49	34
3.....	45	29½	4½.....	47½-	33½-
3½.....	45½-	31½-	5.....	49½	34½
4.....	47½	32½	5½.....	43½	28

Lap Weld			Elec. Weld		
In.	Blk.	Gal.	In.	Blk.	Gal.
2.....	39½	24	37½	22	27-
2½.....	43½	28	40½	25	32½-
3.....	43½	28	40½	25	35-
3½-4	41½-	28½-	42½	27	37½-
5 & 6	41½-	28-	42½	27	42½
8.....	45½	29	44½	28	44
10.....	45	28½	44	27½	44
12.....	44	27½	43	26½	43

Standard Wrought Iron Pipe: Mill price in carlots, threaded and coupled, to consumers about \$200 a net ton.

Butt Weld			Lap Weld		
In.	Blk.	Gal.	In.	Blk.	Gal.
¾.....	+59	+90	1½..	+22	+47½
1.....	+20	+47	2.....	+15½	+40
1½.....	+10	+36	2½..	+7½	+31
2.....	.....	.....	3.....	+5	+26½
2½.....	.....	.....	4.....	.....	+20½
3.....	.....	.....	5.....	.....	+22
3½.....	.....	.....	6.....	.....	+31½

Boiler Tubes: Net base c.l. prices, dollars per 100', mill; minimum wall thickness, cut lengths 4 to 24", inclusive.

O.D. B.W.			Elec. Weld		
In.	Ga.	H.R.	In.	H.R.	C.D.
1	13	11.50	13.39	13.00	13.00
1½	13	13.62	15.87	13.21	15.39
2	13	15.05	17.71	14.60	17.18
2½	13	17.11	20.15	16.60	19.54
3	13	19.18	22.56	18.60	21.89
3½	13	21.37	25.16	20.73	24.40
4	12	23.54	27.70	22.83	26.88
4½	12	25.79	30.33	25.02	29.41
5	12	27.33	32.14	26.51	31.18
5½	11	28.68	33.76	27.32	32.74
6	11	33.39	39.29	32.39	38.11
6½	11	35.85	42.20	34.78	40.94
7	10	44.51	52.35	43.17	50.78
8	9	58.99	69.42	.....	.....
9	9	68.28	80.35	.....	.....
10	7	104.82	123.33	.....	.....

Pipe Cast Iron: Class B, 6-in. and over, \$82.50-\$93.50 per net ton, Birmingham; \$87.50, Burlington, N. J.; 4-in. pipe, \$5 higher; Class A pipe, \$5 a ton over Class B.

Rails, Supplies

Rails: Standard, over 60-lb; \$3.20 per 100 lb mill, except: \$3.30, Minneapolis, Colo.
Light (billet): \$3.55 per 100 lb, mill, except: \$4.25, Minneapolis, Colo.
Light (rail steel): \$3.55 per 100 lb, Williamsport, Pa., Huntington, W. Va.
Railroad Supplies: Track bolts, treated: \$8.50 per 100 lb. mill. Untreated: \$8.25, mill.
Tie Plates: 4.05c mill, except: 4.20c, Pittsburgh, Torrance, Calif.; 4.50c, Seattle.
Splice Bars: 4.25c, mill.
Standard Spikes: 5.35c, mill.
Axles: 5.20c, mill.

RAW MATERIAL AND FUEL PRICES

Minimum delivered prices do not include 3 per cent federal tax.

Pig Iron

Per Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa., furnace.....	\$48.00	\$48.50	\$49.00	\$49.50
Newark, N. J., del.	50.5334	51.0334	51.5334	52.0334
Brooklyn, N. Y., del. ....	....	52.634	53.134	....
Birmingham, furnace	38.88	39.38	....	....
Cincinnati, del. ....	....	45.43	....	....
Buffalo, furnace	46.00	46.50	47.00	....
Boston, del.	54.92	55.42	55.92	....
Rochester, del.	47.95	48.45	48.95	....
Syracuse, del.	49.39	49.89	50.39	....
Chicago, district furnaces..	46.00	46.00-46.50	46.50	47.00
Milwaukee, del. ....	....	47.82	47.82-48.32	48.32
Muskegon, Mich., del. ....	....	51.28-51.78	51.78	....
Cleveland, furnace	46.00	46.50	46.50	47.00
Akron, del.	48.3002	48.8002	48.8002	49.3002
Duluth, furnace .....	....	46.50	46.50	47.00
Erie, Pa., furnace	46.00	46.50	46.50	47.00
Everett, Mass., furnace.....	....	50.00	50.50	....
Geneva, Utah, furnace.....	46.00	46.50	....	....
Seattle, Tacoma, Wash., del. ....	....	54.0578	....	....
Portland, Oreg., del. ....	....	54.0578	....	....
Los Angeles, San Francisco	53.5578	54.0578	....	....
Granite City, Ill., furnace...	47.90	48.40	48.90	....
St. Louis, del.	48.65*	49.15*	49.65*	....
Ironton, Utah, furnace.....	47.00	47.50	....	....
Lone Star, Tex., furnace....	46.00	46.50	....	....
Gulf ports, del.	50.50	51.00	....	....
Neville Island, Pa., furnace	46.00	46.50	46.50	47.00
Pittsburgh, del., N.&S. Sides	47.08	47.58	47.58	48.08
Pittsburgh (Carnegie), furnaces	46.00	....	....	47.00
Sharpsville, Pa., furnace....	46.00	46.50	46.50	47.00
Steelton, Pa., furnace.....	48.00	48.50	49.00	49.50
Struthers, O., furnace.....	46.00	....	....	....
Swedeland, Pa., furnace....	48.00	48.50	49.00	49.50
Philadelphia, del.	49.39	49.89	50.39	50.89
Toledo, O., furnace	46.00	46.50	46.50	47.00
Cincinnati, del.	50.8230	51.3230	....	....
Troy, N. Y., furnace.....	48.00	48.50	49.00	....
Youngstown, O., furnace....	46.00	46.50	46.50	47.00
Mansfield, O., del.	50.1022	50.6022	50.6022	51.1022

* Including 3 per cent federal transportation tax.

† Low phosphorus southern grade.

‡ To Neville Island base add: \$0.86 for McKees Rocks, Pa.; \$1.31 Lawrenceville, Homestead, McKeesport, Monaca; \$1.73 Verona; \$1.94 Brackenridge; \$1.08 for Ambridge and Aliquippa.

§ Includes, in addition to Chicago, South Chicago, Ill., East Chicago, Gary and Indiana Harbor, Ind.

Blast Furnace Silvery Pig Iron

6.00-6.50 per cent Si (base). \$59.50
 6.51-7.00.. 60.50 9.01- 9.50. 65.50
 7.01-7.50.. 61.50 9.51-10.00. 66.50
 7.51-8.00.. 62.50 10.01-10.50. 67.50
 8.01-8.50.. 63.50 10.51-11.00. 68.50
 8.51-9.00.. 64.50 11.01-11.50. 69.50
 F.o.b. Jackson, O., per gross ton.
 Buffalo furnace \$1.25 higher.

Bessemer Ferrosilicon

Prices same as for blast furnace silvery iron, plus \$1 per gross ton.

Electric Furnace Silvery Pig Iron
 Si 14.01-14.50%, \$78.50 furnace,
 Niagara Falls; \$80 open-hearth and
 foundry grade, Keokuk, Iowa, or
 Wenatchee, Wash., freight allowed
 to normal trade area. 12½ lb pig-
 lets, \$85, Keokuk, Iowa, freight al-
 lowed to normal trade area. Add
 \$1 a ton for each additional 0.5%
 Si to 18%; \$1 for each 0.5% Mn
 over 1%; \$1 a ton for 0.45% max. P.

Charcoal Pig Iron

Semi-cold blast, low phosphorous.
 F.o.b. furnace, Lyles, Tenn. \$66
 (For higher silicon iron a differential
 over and above the price of
 base grade is charged as well as
 for the hard chilling iron, Nos. 5
 and 6.)

Low Phosphorus

Steelton, Pa., Troy, N. Y., \$54;
 Philadelphia, \$56.9786 del. Inter-
 mediate phosphorus, Central fur-
 nace, Cleveland, \$51.

Electrodes

(Threaded, with nipples, unboxed)

—Inches— Cents per lb.
 Diam. Length f.o.b. plant

Graphite	
17, 18, 20	60, 72 16.00
8 to 16	48, 60, 72 16.50
7	48, 60 17.75
8	48, 60 19.00
4, 5½	40 19.50
3	40 20.50
2½	24, 30 21.00
2	24, 30 23.00

Carbon	
40	100, 110 7.50
35	100, 110 7.50
30	84, 110 7.50
24	72 to 104 7.50
17 to 20	84, 90 7.50
14	60, 72 8.00
10, 12	60 8.25
8	60 8.50

Fluorspar

Metallurgical grade, f.o.b. shipping
 point, in Ill., Ky., net tons, car-
 loads, effective CaF₂ content, 70%
 or more, \$37; less than 60%, \$34.

Metallurgical Coke

Price per Net Ton

Beehive Ovens	
Connellsville, furnace..	\$13.00-13.50
Connellsville, foundry..	15.50-16.00
New River, foundry...	18.00
Wise county, foundry..	15.35
Wise county, furnace..	14.60
Oven Foundry Coke	
Kearney, N. J., ovens.	\$22.00
Everett, Mass., ovens.	22.70
New England, del. f..	22.70
Chicago, ovens	20.00
Chicago, del.	21.45
Detroit, del.	23.76
Terre Haute, ovens....	20.20
Milwaukee, ovens	20.75
Indianapolis, ovens ...	19.85
Chicago, del.	23.19
Cincinnati, del.	22.66
Detroit, del.	23.61
Ironton, O., ovens....	19.40
Cincinnati, del.	21.63
Painesville, O., ovens..	20.90
Buffalo, del.	23.42
Cleveland, del.	22.55
Erie, del.	22.70
Birmingham, ovens ...	17.70
Philadelphia, ovens ...	20.45
Swedeland, Pa., ovens.	20.40
Portsmouth, O., ovens.	19.50
Detroit, ovens	20.65
Detroit, del.	*21.70
Buffalo, del.	22.75
Flint, del.	22.98
Pontiac, del.	21.98
Saginaw, del.	23.30

Includes representative switching
 charge of: *, \$1.05; †, \$1.45. ‡ Or
 within \$4.03 freight zone from
 works.

Coal Chemicals

Spot, cents per gallon, ovens (Price effective as of Aug. 5)	
Pure benzol	20.00
Toluol, one degree	19.00-23.50
Industrial xylol	20.50-26.50
Per ton bulk, ovens	
Sulphate of ammonia	\$45.00
Per pound, ovens (Effective as of Oct. 1)	
Phenol, 40 (carlots, re- turnable drums)	13.50
Do., less than carlots ..	14.25
Do., tank cars	12.50
(Effective as of Oct. 25)	
Naphthalene flakes, balls, bbl to jobbers, "household use"	13.75

Refractories

(Prices per 1000 brick, f.o.b. plant)

Fire Clay Brick	
Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Ky., Clearfield, or Curwensville, Pa., Ottawa, Ill., \$100. Hard- fired, \$135 at above points.	
High-Heat Duty: Salina, Pa., \$85; Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clear- field, Beach Creek, or Curwens- ville, Pa., Olive Hill, Hitchins, Haldeman, or Ashland, Ky., Troup, or Athens, Tex., Stevens Pottery, Ga., Portsmouth, or Oak Hill, O., Ottawa, Ill., \$80.	
Intermediate-Heat Duty: St. Louis, or Vandalia, Mo., West Decatur, Orviston, Beach Creek, or Clear- field, Pa., Olive Hill, Hitchins, or Haldeman, Ky., Athens, or Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., \$74.	
Low-Heat Duty: Oak Hill, or Ports- mouth, O., Clearfield, Orviston, Pa., Bessemer, Ala., Ottawa, Ill., \$66.	

Ladle Brick

Dry Press: \$55, Freeport, Merrill
 Station, Clearfield, Pa.; Chester,
 New Cumberland, W. Va.; Iron-
 dale, Wellsville, O.
 Wire Cut: \$53, Chester, New Cum-
 berland, W. Va.; Wellsville, O.
 Malleable Bung Brick
 St. Louis, Mo., Olive Hill, Ky.,
 Ottawa, Ill., \$90; Beach Creek,
 Pa., \$80.

Silica Brick

Mt. Union, Claysburg, or Sproul,
 Pa., Ensley, Ala., \$80; Hays, Pa.,
 \$85; Joliet or Rockdale, Ill., E.

Chicago, Ind., \$89; Lehi, Utah,
 Los Angeles, \$95.
 Eastern Silica Coke Oven Shapes:
 Claysburg, Mt. Union, Sproul,
 Pa., Birmingham, \$80.
 Illinois Silica Coke Oven Shapes:
 Joliet or Rockdale, Ill., E. Chi-
 cago, Ind., Hays, Pa., \$81.

Basic Brick

(Base prices per net ton; f.o.b.
 works, Baltimore or Chester, Pa.)
 Burned chrome brick, \$66; Chemi-
 cal-bonded chrome brick, \$69;
 magnesite brick, \$91; chemical-
 bonded magnesite, \$80.

Magnesite

(Base prices per net ton, f.o.b.
 works, Chewelah, Wash.)
 Domestic dead-burned, ¾" grains;
 Bulk, \$30.50-31.00; single paper
 bags, \$35.00-35.50.

Dolomite

(Base prices per net ton)
 Domestic, dead-burned bulk: Bill-
 meyer, Blue Bell, Williams, Ply-
 mouth Meeting, Pa., Millville, W.
 Va., Nario, Millersville, Martin,
 Gibsonburg, Woodville, O., \$12.25;
 Thornton, McCook, Ill., \$12.35;
 Dolly Siding, Bonne Terre, Mo.,
 \$12.45.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural)

Lower Lake Ports

(Any increase or decrease in R.R.
 freight rates, dock handling charges
 and taxes thereon effective after
 Dec. 31, 1948, are for buyer's ac-
 count.)
 Old range bessemer \$7.60 || Old range nonbessemer | 7.45 |
Mesabi bessemer	7.35
Mesabi nonbessemer	7.20
High phosphorus	7.20

Eastern Local Ore

Cents, units, del. E. Pa.

Foundry and basic 56.62%
 concentrates, contract 16.00 |

Foreign Ore

Cents per unit, c.i.f. Atlantic ports
 Swedish basic, 60 to 68%:
 Spot 17.00 || Long-term contract | 15.00 |
| Brazil iron ore, 68-69% | 19.50 |

Tungsten Ore

Wolframite and scheelite
 per short ton unit, duty
 paid \$26-\$28 |

Manganese Ore

Long term contracts, involving large
 tonnages, prices are nominal; near-
 by, 48%, duty paid, 81.8c-83.8c per
 long ton unit, c.i.f. United States
 ports; prices on lower grades ad-
 justed to manganese content and
 impurities.

Chrome Ore

Gross ton f.o.b. cars, New York,
 Philadelphia, Baltimore, Charles-
 ton, S.C., plus ocean freight dif-
 ferential for delivery to Portland,
 Oreg., and/or Tacoma, Wash.
 (\$ 3 paying for discharge; dry
 basis, subject to penalties if
 guarantees are not met.)

Indian and African

48% 2.8:1 37.50 || 48% 3:1 | 39.00 |
| 48% no ratio | 31.00 |

South African (Transvaal)

44% no ratio \$25.50-\$26.00 || 45% no ratio | 26.50 |
| 48% no ratio | 29.00-30.00 |
| 50% no ratio | 29.50-30.50 |

Brazilian—nominal

44% 2.5:1 lump \$33.65 |

Rhodesian

45% no ratio \$27-\$27.50 || 48% no ratio | 30.00 |
| 48% 3:1 lump | 39.00 |

Domestic (seller's nearest rail)

48% 3:1 \$39.00 |

Molybdenum

Sulphide conc., lb, Mo., cont.,
 Mines \$0.90 |

WAREHOUSE STEEL PRICES

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS		H.R. Alloy 4140 ⁸	Standard Structural Shapes	PLATES	
	H.R. 18 Ga. and Heavier*	C.R. 15 Ga.	Galv. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.			Carbon	Floor
New York (city)	5.80‡	6.51	7.10	5.82	...	5.77	6.56	8.23	5.53	5.85	7.36
New York (c'try)	5.60‡	6.31	6.90	5.62	...	5.57	6.36	8.08	5.33	5.65	7.16
Boston (city) ..	5.70	6.70**	7.11	5.75	...	5.67	6.42	8.72	5.57	5.90	7.40
Boston (c'try) ..	5.55	6.55**	6.96	5.60	...	5.52	6.27	8.57	5.42	5.75	7.25
Phila. (city)...	5.80	6.39	6.73	5.55	...	5.55	6.09	8.00	5.25	5.50	6.70
Phila. (c'try) ..	5.65	6.24	6.58	5.40	...	5.40	5.94	7.85	5.10	5.35	6.55
Balt. (city)...	5.46	6.36	6.81	5.52	...	5.57	6.31	...	5.51	5.71	7.16
Balt. (c'try)...	5.31	6.21	6.66	5.37	...	5.42	6.16	...	5.36	5.56	7.01
Norfolk, Va. ..	5.80‡	...	...	...	...	6.05	7.05	...	6.05	6.05	7.55
Wash. (w'hse).	6.07‡	...	...	5.83	...	5.88	6.62	...	5.82	6.02	7.47
Buffalo (del.)..	5.00‡	5.90	7.57	5.39	6.42	5.10	5.60	10.13	5.15	5.50	7.06
Buffalo (w'hse).	4.85‡	5.75	7.42	5.24	6.27	4.95	5.40	9.60	5.00	5.35	6.91
Pitts. (w'hse)..	4.85	5.754*	6.80	5.00	6.00	4.90	5.40	9.20††	4.90	5.05	6.55
Detroit (w'hse)	5.32	6.224*	7.35	5.42	6.42-6.73	5.43	5.90	8.44-8.59	5.48	5.67	7.02
Cleveland (del.)	5.00	5.90	6.80-6.85	5.15-5.18	6.15	5.15-5.16	5.60	7.84-8.00	5.15-5.16	5.35-5.36	6.80-6.81
Cleve. (w'hse).	4.85	5.75	6.65-6.70	5.00-5.03	6.00	5.00-5.01	5.45	7.84-7.85	5.00-5.01	5.20-5.21	6.65-6.66
Cincin. (w'hse).	5.26‡	5.94**	6.83	5.38	6.10	5.43	5.94	...	5.43	5.63	7.03
Chicago (city) 5.00-5.20‡	5.904	6.95	5.00	6.67-6.83	5.05	5.60	7.854	5.05	5.25	5.25	6.70
Chicago (w'hse) 4.85-5.05‡	5.754	6.80	4.85	6.52-6.68	4.90	5.40	7.704	4.90	5.10	5.10	6.55
Milwaukee(city) 5.18-5.38‡	6.084	7.13	5.18	6.82-7.01	5.23	5.78	8.034	5.23	5.43	5.43	6.88
St. Louis (del.)	5.37	6.274	7.44	5.34	6.64	5.39	6.194	6.64	5.39	5.59	7.04
St. L. (w'hse)...	5.22	6.124	7.29	5.19	6.49	5.24	6.044	6.49	5.24	5.44	6.89
Birm'ham (city)	5.15	6.15	6.55	5.15	...	5.15	6.83	...	5.15	5.30	7.62
Birm'ham(c'try)	5.00	6.00	6.40	5.00	...	5.00	6.68	...	5.00	5.15	7.47
Omaha, Nebr...	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Los Ang. (city)	6.60	8.05**	7.95	6.80	9.50	6.25	8.20	...	6.10	6.30	8.20
L. A. (w'hse)...	6.45	7.90**	7.80	6.65	9.35	6.10	8.05	...	5.95	6.15	8.05
San Francisco..	6.15 ¹⁰	7.50 ³	8.10	6.75 ¹⁰	8.25 ⁸	5.90 ¹⁰	7.55	10.85 ²	5.90	6.35	8.10
Seattle-Tacoma.	6.70‡	9.15 ³	8.80	6.70 ⁷	...	6.20 ⁷	8.15 ¹	10.35	6.30 ⁷	6.35 ⁷	8.40 ⁷

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; ** 17 gage; †† annealed.

Base quantities: 400 to 1999 lb except as noted; Cold-rolled strip, 2000 lb and over; cold-finished bars, 1000 lb and over; galvanized sheets, 450 lb to 1499 lb; 1—1500 lb and over; 2—1000 to 4999 lb; 3—450 to 1499 lb; 4—400 to 1499 lb; 5—1000 to 1999 lb; 6—1000 lb and over; 7—300 to 999 lb; 8—1500 to 1999 lb; 9—400 to 3999 lb; 10—400 lb and over; 11—500 to 1499 lb.

PRICES OF LEADING FERROALLOY PRODUCTS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si) Carlot per gross ton, \$65, Palmerton, Pa.; \$66, Pittsburgh and Chicago; (16% to 19% Mn) \$1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk \$172 per gross ton of alloy, c.l., packed, \$184; gross ton lots, packed, \$199; less gross ton lots, packed, \$216; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., or Welland, Ont. Base price: \$174, f.o.b. Birmingham and Johnstown, Pa., furnaces; \$172, Sheridan, Pa.; \$175, Etna, Pa. Shipment from Pacific Coast warehouses by one seller add \$33 to above prices, f.o.b. Los Angeles, San Francisco, Portland, Ore. Shipment from Chicago warehouse, ton lots, \$214; less gross ton lots, \$231 f.o.b. Chicago. Add or subtract \$2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Carload, lump, bulk, max. 0.10% C, 24.75c per lb of contained Mn, carload packed 25.5c, ton lot 26.6c, less ton 27.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 0.75% C—max. 7% Si. **Special Grade:** (Mn 90% approx., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Carload, lump, bulk 18.15c per lb of contained Mn, carload packed 18.9c, ton lot 20.0c, less ton 21.2c. Delivered. Spot, add 0.25c.

Manganese Metal: (Mn 96% min., Fe 2% max., Si 1% max., C 0.20% max.). Carload 2" x D, packed 35.5c per lb of metal, ton lot 37c, less ton 39c. Delivered. Spot, add 2c.

Manganese, Electrolytic: Less than 250 lb, 35c; 250 lb to 1999 lb, 32c; 2000 to 35,999 lb, 30c; 36,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 8.95c per lb of alloy, carload packed, 9.70c, ton lot 10.60c, less ton 11.60c. Freight allowed. For 2% C grade, Si 15-17.5%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk, 20.5c per lb of contained Cr, c.l., packed

21.4c, ton lot 22.55c, less ton 23.95c. Delivered. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Contract, c.l., 8MxD, bulk 22.0c per lb of contained Cr, c.l., packed 22.9c, ton 24.25c, less ton 26.0c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.03% C 31.85c per lb of contained Cr, 0.04% C 29.75c, 0.06% C 28.75c, 0.10% C 28.25c-28.5c, 0.15% C 28.0c, 0.20% C 27.75c, 0.50% C 27.5c, 1% C 27.25c, 1.50% C 27.1c, 2% C 27.0c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%, Mn 4-6%, C 0.75-1.25% max.). Contract, carload, lump, bulk 27.75c per lb of contained chromium, carload, packed 28.85c, ton lot 30.05c, less ton 31.85c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 5c for each 0.25% of N above 0.75%.

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract, carload, 1" x D; packed, max. 0.50% C grade, \$1.03 per lb of contained chromium, ton lot \$1.05, less ton \$1.07. Delivered. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per lb of contained Si; packed 19.90-21.70c; ton lot 21.00-22.60c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 11.3c per lb of contained Si, carload packed 12.9c, ton lot 14.35c, less ton 16c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices. **75% Ferrosilicon:** Contract, carload, lump, bulk, 13.5c per lb of contained Si, carload packed 14.8c, ton lot 15.95c, less ton 17.2c. Delivered. Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk, 14.65-15c per lb of contained Si, carload

packed 15.9c, ton lot 16.9c, less ton 18.05c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices. **90-95% Ferrosilicon:** Contract, carload, lump, bulk, 16.5c per lb of contained Si, carload packed 17.7c, ton lot 18.65c, less ton 19.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe.) C.l., lump, bulk, regular 19.0c per lb of Si c.l. packed 20.2c, ton lot 21.1c, less ton 22.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 7.40c per lb of alloy, ton lots packed 8.80c, 200 to 1999 lb 9.15c, smaller lots 9.65c. Delivered. Spot up 0.5c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3% lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 13.75c per lb of briquet, carload packed 14.45c, ton lot 15.25c, less ton 16.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk, 10.45c per lb of briquet, c.l. packaged 11.25c, ton lot 12.05c, less ton 12.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3 1/2 lb and containing exactly 2 lb of Mn and approx. 1/2 lb of Si). Contract, c.l. bulk 10.30c, per lb of briquet, c.l. packaged 11.1c, ton lot 11.9c, less ton 12.8c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.15c per lb of briquet, c.l. packed 6.95c, ton lot 7.75c, less ton 8.55c. Delivered. Spot, add 0.25c.

(Small size—weighing approx. 2 1/2 lb and containing exactly 1 lb of Si). Carload, bulk 6.30c, c.l. packed 7.10c, ton lots 7.90c, less ton 8.80c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybde-Oxide Briquets: (Containing 2 1/2 lb of Mo each) 95.00c per pound of Mo contained. F.o.b. Langeloth, Pa.

(Please turn to page 154)

Copper Reverses Price Trend

Advance of 1-cent on red metal to 17.00c and stronger undertone in lead reflects more active buying coupled with curtailment in production. Tin controls are extended

New York—First reversal in the general downtrend in metal prices occurred last week when electrolytic copper advanced 1 cent to 17.00c, delivered Connecticut Valley. The rise followed nine successive reductions and was the first upward revision in copper prices in nearly a year, the previous one having been on July 29, 1948, when the postwar peak of 23.50c was posted.

Custom smelters were forced to advance prices since scrap was not being received at the depressed values in sufficient volume to cover their customers' requirements for refined metal. Conversely, the declines since mid-March had been attributed to the fact that custom smelters had been unable to dispose of their daily intake of raw materials. When the market showed signs of weakening, consumers withdrew from the refined metal market in order to reduce as quickly as possible their inventories of high-priced metal. The curtailment in buying was aggravated further by the tapering in operations in consuming plants. It is believed that inventories have been reduced to desired levels, as indicated by the resumption of more active buying.

Undertone of the copper market has been strengthened by the widespread shutdowns of producing properties due to unfavorable metal price developments and labor difficulties. The Carteret, N. J., refinery of the U. S. Metals Refining Co. was struck on June 30 by the Mine, Mill & Smelter Workers Union (CIO) following expiration of the contract between the union and the company, and a breakdown of negotiations for a new contract.

While lead consumers took larger tonnages last month, supplies are still available at the present 11.85-cent St. Louis level. Zinc prices also held unchanged last week.

Copper—Following the advance in electrolytic copper, refiners and brass ingot makers raised their buying prices for copper scrap 1 cent a pound to the basis of 13.50c for No. 1 copper wire. Leading brass and bronze ingot makers revised their prices upward ½-cent a pound on most grades. Prices for ingot Nos. 245, 255, and 256 were advanced 1 cent a pound while the price for ingot No. 132 held unchanged. This advance in ingot prices was the first since mid-1948.

Up to the time of going to press, action had been taken by only one leading brass mill, but it was expected that proportionate upward revisions in prices would be put into effect soon by other mills and wire drawers.

Revere Copper & Brass Inc. announced that effective as of July 7 prices of its products would be predicated on 17-cent copper. The company is now selling its products on a firm price basis and will accept fully specified orders at firm prices

for shipment within 60 days. Commenting on the new policy, C. Donald Dallas, chairman of the board said: "The consumer today wishes to know what the cost of materials will be to him and this benefit is conferred by a firm price policy."

Lead—At least one leading seller continued to build up a waiting list of unfilled orders since his intake of scrap, ores and concentrates is not sufficient to cover inquiry fully. Bulk of the business is being done on an average price basis, with a substantial buying potential being built up for flat-price booking.

Total stocks of lead held by smelters and refiners increased 23,892 tons to a total of 220,069 tons as of June 1, the largest reported since April, 1939, according to the American Bureau of Metal Statistics. Stocks on June 1, 1948, totaled 122,689 tons. The increase was due to a rise in stocks of refined lead to 81,064 tons from 80,283 tons and in concentrates to 27,174 tons from 22,156 tons.

With the expiration of the suspension of lead tariffs on June 30, import duties of ¾-cent per pound for lead contained in ore and 1.0625 cents per pound for pig lead are now in effect.

Zinc—Undertone of the slab zinc market continued firm last week, despite the absence of active buying. Demand has improved in some quarters, however, and a further increase is anticipated since consumers have disposed of most of their excess inventories.

Tin—Control of tin distribution, and use of the metal in end-products, is authorized under Public Law 153 for another year if in the opinion of the Commerce Department such control continues to be needed. The M-43 order governing allocation of tin and the M-81 order governing use of tin in end-products, therefore, will continue as recently revised—at least for the present. In view of the extension of export controls last February, this makes for continued 100 per cent control of tin. Tin plate export controls are to be discussed at a meeting with the producers late in July; at this meeting the prospect for continued exercise of the other controls is expected to be clarified.

Under Public Law 148, signed by the President July 1, the Reconstruction Finance Corp. may sell to domestic tin smelters low-grade tin concentrates, the purpose being to encourage tin production by private interests. Such raw material will be sold at the start to Vulcan Detinning Co. which has a process for producing commercially pure tin from low-grade Bolivian concentrates. The tin made from the concentrates would be purchased by the RFC at its full going price.

Failure of the House Ways and Means Committee to take action on the Walter bill to suspend for an-

other year the duties on imports of ferrous and nonferrous scrap means that the normal import tariff on these materials again are reinstated, as of July 1.

New contracts against tin allocations for July have been authorized at the unchanged price of \$1.03 for grade A metal.

Shipments of Straits tin in June amounted to 2891 tons compared with 1777 tons in May and 2780 tons in June, 1948. Of the June, 1949, total the United States received 2400 tons, bringing the total for the first six months to 19,111 tons against 15,500 tons in the like 1948 period.

Combined Tin Committee has announced interim allocations of tin metal for the second half of 1949, amounting to 25,070 long tons and including 17,100 tons to the United States. World stocks at the end of March totaled 135,400 tons, a gain of only 200 tons over the previous month's total.

Aluminum Building Completed

Pittsburgh — Aluminum Co. of America has announced completion of its revolutionary, thin-walled aluminum office building in Davenport, Iowa. This building may well be the forerunner of a new and economical trend in office building design and construction throughout the country.

The 4½ story building consists of hundreds of cast aluminum panels, fastened to the structural steel building frame, and backed with lightweight concrete insulating slabs only 4 inches thick. Years of intensive developmental work by Alcoa's architectural division, collaborating with its architects and builders, has produced a strong, weather-resistant aluminum curtain wall that may become the prototype of Alcoa's proposed, 30-story skyscraper in downtown Pittsburgh, construction of which is scheduled to begin in mid-1950.

Several significant construction innovations were realized in the erection of the Davenport building. Materials were conveyed to upper stories of the structure and installed from within, thus eliminating the use of outside scaffolding, rigging and derricks. Erection time was accelerated by means of cast anchors on each aluminum panel, permitting fewer men to secure them directly to spandrel beams. Sectional aluminum panels were delivered to the building site ready for installation, reducing congestion and allowing several work crews to operate in close spaces simultaneously. The building incorporates aluminum window frames, doors, railings, marquee and trim. Within the building, doors, partitions, elevator cabs, lighting fixtures, electrical conduit, hardware, wainscoting, acoustical ceilings, ornamental trim and appointments are constructed from aluminum sheets, extrusions, castings, bar and tubing. Aluminum foil, cemented to the inner walls, serves as an effective moisture-vapor barrier.

Harrison & Abramovitz Inc., New York, architects, and George A. Fuller Co., builders have been engaged to design and erect Alcoa's skyscraper in Pittsburgh.

NONFERROUS METAL PRICES

(Cents per pound, carlots, except as otherwise noted)

Copper: Electrolytic 17.00c, Conn. Valley; Lake, Nom., Conn. Valley.

Brass Ingot: 85-5-5-5 (No. 115) 14.25-16.00c; 88-10-2 (No. 215) 24.00c; 80-10-10 (No. 305) 20.50c; No. 1 yellow (No. 405) 12.00-13.75c.

Zinc: Prime western 9.00c, brass special 9.25c, intermediate 9.50c, East St. Louis; high grade 10.00c, delivered.

Lead: Common 11.85c; chemical, nom.; cor-rod- ing, 11.95c, St. Louis.

Primary Aluminum: 99% plus, ingots 17.00c, pigs 16.00c. Base prices for 10,000 lb and over, f.o.b. shipping point.

Secondary Aluminum: Piston alloys 15.50-15.75c; No. 12 foundry alloy (No. 2 grade) 14.25-14.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 15.50-15.75c; grade 2, 14.50-14.75c; grade 3, 13.50-13.75c; grade 4, 12.50-12.75c. Prices include freight at carload rate up to 75 cents per 100 lb.

5% titanium-aluminum alloy No. 1 (low Cu) 31.00c; No. 2 (2% Cu) 28.00c, f.o.b. Eddy-stone, Pa.

Magnesium: Commercially pure (99.8%) stand-ard ingots, 10,000 lb and over, 20.50c, f.o.b. Freeport, Tex.

Tin: Grade A, 99.8% or higher (including Straits) \$1.03; grade B, 99.8% or higher, not meeting specifications for grade A, with 0.05% max. arsenic, \$1.028; grade C, 99.65-99.79%, incl., \$1.024; 99.5-99.649% \$1.024, grade F, 98-98.999% \$1.015 for tin content. Prices are ex-dock, New York, in 5-ton lots.

Antimony: American 99-99.8% and over but not meeting specifications below, 38.50c; 99.8% and over (arsenic 0.05% max.; other impuri- ties, 0.1% max.) 39.00c, f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 40.00c; 25-lb pigs, 42.50c; "XX" nickel shot, 43.50c; "R" nickel shot or ingots, for addition to cast iron, 40.50c. Prices include import duty.

Mercury: Open market, spot, New York \$79- \$83 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, \$24.50 per lb contained Be.

Cadmium: "Regular" straight or flat forms, \$2 del.; special or patented shapes, \$2.15.

Cobalt: 97-98%, \$1.80 per lb for 550 lb (keg); \$1.82 per lb for 100 lb (case); \$1.87 per lb under 100 lb.

Gold: U. S. Treasury, \$35 per ounce.

Silver: Open market, New York, 71.50c per ounce.

Platinum: \$69-\$72 per ounce.

Palladium: \$24 per troy ounce.

Iridium: \$100-\$110 per troy ounce.

Titanium (sponge form): \$5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill; based on 16-cent copper.)

Sheet: Copper 29.68; yellow brass 26.77; com-mercial bronze, 95%, 29.68; 80%, 29.28; red brass, 85%, 28.36; 80%, 27.97; best quality, 27.56; nickel silver, 18%, 40.57; phosphor-bronze, grade A, 5%, 48.92.

Rods: Copper, hot rolled 25.53; cold drawn 26.78; yellow brass, free cutting, 21.34; commercial bronze, 95% 29.37; 90% 28.97; red brass 85% 28.05; 80% 27.66.

Seamless Tubing: Copper 29.72, yellow brass 29.78; commercial bronze 90% 31.94; red brass 85% 31.27; 80% 30.88.

Wire: Yellow brass 27.06; commercial bronze, 95% 29.97; 90% 29.57; red brass, 85% 28.65; 80% 28.26; best quality brass 27.85.

Copper Wire: Bare soft, f.o.b., eastern mills, 100,000 lb lots, 21.80, l.c.l. 22.42½, c.l. 21.92½; weatherproof, f.o.b., eastern mills, 100,000 lb lots, 23.97½, l.c.l. 24.72½, c.l. 24.22½; magnet, delivered, c.l. 26.00, 15,000 lb or more 26.25, l.c.l. 26.75.

ALUMINUM

Sheets and Circles: 2s and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle†
0.249-0.136	12-48	26.9	...	...
0.135-0.096	12-48	27.4	...	...
0.095-0.077	12-48	27.9	26.0	29.6
0.078-0.068	12-48	28.5	26.2	29.8
0.067-0.061	12-48	28.5	26.2	29.8
0.060-0.048	12-48	28.7	26.4	30.1
0.047-0.038	12-48	29.1	26.6	30.4
0.037-0.030	12-48	29.5	27.0	30.9
0.029-0.024	12-48	29.9	27.3	31.3
0.023-0.019	12-36	30.5	27.7	31.8
0.018-0.017	12-36	31.1	28.3	32.6
0.016-0.015	12-36	31.8	28.9	33.5
0.014	12-24	32.7	29.7	34.6
0.013-0.012	12-24	33.6	30.4	35.5
0.011	12-24	34.6	31.3	36.7
0.010-0.0095	12-24	35.6	32.3	38.0
0.009-0.0085	12-20	36.8	33.4	39.5
0.008-0.0075	12-20	38.1	34.6	41.1
0.007	12-18	39.5	35.9	42.9
0.006	12-18	41.0	37.2	47.0

* Minimum length, 60 inches. † Maximum diameter, 24 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.)	Round— R317-T4, 17S-T4	Hexagonal— R317-T4 17S-T4
0.125	48.0	...
0.156-0.203	41.0	...
0.219-0.313	38.0	...
0.344	37.0	...
0.375	36.5	45.5
0.406	36.5	...
0.438	36.5	45.5
0.469	36.5	...
0.500	36.5	45.5
0.531	36.5	...
0.563	36.5	...
0.594	36.5	...
0.625	36.5	43.0
0.656	36.5	...
0.688	36.5	...
0.750-1.000	35.5	40.5
1.063	35.5	...
1.125-1.500	34.5	39.0
1.563	34.5	...
1.625	33.5	...
1.688-2.000	33.5	...
2.125-2.500	32.5	...
2.625-3.375	31.5	...

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more, \$17.00 per cwt; add 50c per cwt, 10 sq ft to 140 sq ft. Pipe: Full coils, \$17.00 per cwt. Traps and Bends: List price plus 45%.

ZINC

Sheets, 14.00c, f.o.b. mill, 36,000 lb and over, Ribbon zinc in coils, 13.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 12.00c; over 12-in., 13.00c.

NICKEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled, 60.00c. Strip, cold-rolled 66.00c. Rods and shapes, 56.00c. Plates 58.00c. Seamless tubes, 89.00c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 47.00c; Strip, cold-rolled, 50.00c. Rods and shapes, 45.00c. Plates, 46.00c. Seamless tubes, 80.00c. Shot and blocks, 40.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.312 in. in diameter, less than 25 lb, 52.00-56.00c; 25 to 99 lb, 42.00-46.00c; 100 lb to 4000 lb, 35.00-36.00c.

Plating Materials

Chromic Acid: 99.9%, flake, f.o.b. Philadel-phia, carloads, 26.00c; 5 tons and over 28.50c; 1 to 5 tons, 27.00c; less than 1 ton, 27.50c.

Copper Anodes: Base, 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat un-trimmed 26.34c; oval 25.34c; cast 25.37c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 48.00c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 18.00c; 1000 to 19,900 lb, 17.00c, f.o.b. Niagara Falls, N. Y.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 250 lb, 26.25c; over 250 lb, 25.25c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, car-loads, 56.00c; 10,000 to 30,000 lb, 57.00c; 3000 to 10,000 lb, 58.00c; 500 to 3000 lb, 59.00c; 100 to 500 lb, 61.00c; under 10 lb, 64.00c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 26.50c; 400-lb bbl, 24.50c, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, 119.00c; 500 to 999 lb, 119.50c; 200 to 499 lb, 120.00c; less than 200 lb, 121.50c; ball, 1000 lb and over, 121.25c; 500 to 999 lb, 121.75c; 200 to 499 lb, 122.25c; less than 200 lb, 123.75c f.o.b. Seward, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers 71.8c; 100 or 300 lb drums only, 100 to 500 lb, 63.6c; 600 to 1900 lb, 61.2c; 2000 to 9900 lb, 59.4c, f.o.b. Sew-aren, N. J. On 100 or 350 lb drums only, 100 to 600 lb, 63.3c; 700 to 1900 lb, 60.9c; 2000 to 9900 lb, 59.1c; 10,000 lb and over, 58.00c, f.o.b. Carteret, N. J. Freight not ex-ceeding St. Louis rate allowed.

Zinc Cyanide: 100-lb drums 42.50c, f.o.b. Cleveland; 43.00c, Detroit; 42.00c, Philadelphia.

Stannous Sulphate: Less than 2000 lb in 100 lb kegs, 100.00c, in 400 lb bbl, 99.00c; more than 2000 lb, in 100 lb kegs, 99.00c, in 400 lb bbl, 98.00c, f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, 97.00c; 100 lb kegs, 98.00c, f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb f.o.b. shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	13.00	13.00	12.25
Yellow brass	10.50	10.25	9.62½
Commercial Bronze	12.12½	11.87½	11.37½
95%	11.87½	11.62½	11.12½
90%	11.75	11.50	11.00
Red Brass	11.50	11.25	10.75
80%	11.50	11.25	10.75
Best Quality (71-80%)	9.75	9.50	9.00
Muntz Metal	12.62½	12.37½	6.31½
Nickel, silver, 10%	14.87½	14.62½	13.62½
Phos. bronze, A....	10.25	10.00	9.37½
Naval brass	10.25	10.00	9.37½
Manganese bronze	10.25	10.00	9.37½

BRASS INGOT MAKERS

BUYING PRICES

(Cents per pound, f.o.b. shipping point, carload lots)

No. 1 copper 13.50, No. 2 copper 12.50, light copper 11.50, composition red brass 10.25-10.50; radiators 8.00, heavy yellow brass 7.50-7.75.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 13.50, No. 2 copper 12.50, light copper 11.50, refinery brass (60% copper), per dry copper content 10.50-11.00.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and Brass: Heavy copper and wire No. 1 11.50-12.00, No. 2 10.50-11.00, light cop- per 9.50-10.00, No. 1 composition red brass 7.75-8.00, No. 1 composition turnings 7.25-7.50, mixed brass turnings 4.50-5.00, new brass clippings 9.00-9.50; No. 1 brass rod turnings 7.00-7.25, light brass 5.00-5.25, heavy yellow brass 5.00-5.25, new brass rod ends 7.00-7.25, auto radiators, unswasted 5.50-5.75, cocks and faucets 6.75-7.00, brass pipe 7.00-7.25.

Lead: Heavy 8.00-8.50, battery plates 4.50-4.75, linotype and stereotype 10.25-10.50, elec- trotype 7.50-8.00, mixed babbitt 10.50-11.00, solder joints, 10.50-11.00.

Zinc: Old zinc 3.00-3.50, new die cast scrap 3.00-3.50, old die cast scrap 2.00.

Tin: No. 1 pewter 52.00-54.00, block tin pipe 70.00-72.00, No. 1 babbitt 40.00-42.00.

Aluminum: Clippings 2S 9.50-10.00, old sheets 5.50-6.00, crankcase 5.50-6.00, borings and turnings 3.00-3.50, pistons, free of struts, 5.50-6.00.

DAILY PRICE RECORD

	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
June Avg.	16.606	11.850	9.548	103.000	17.000	38.500	40.000	71.500
May Avg.	18.045	13.568	11.880	103.000	17.000	38.500	40.000	71.500
Apr. Avg.	21.774	15.017	14.085	103.000	17.000	38.500	40.000	71.500
July 1-5..	16.00	11.85	9.00	103.00	17.00	38.50	40.00	71.50
July 6-7..	17.00	11.85	9.00	103.00	17.00	38.50	40.00	71.50

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. E. St. Louis; Zinc, prime western, del. St. Louis; Tin, Straits, del. New York; Aluminum, primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery, unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

OPEN MARKET PRICES, IRON AND STEEL SCRAP

Prices are dollars per gross ton, including broker's commission, delivered at consumer's plant except where noted.

PITTSBURGH

No. 1 Heavy Melt.	\$21.00
No. 2 Heavy Melt.	19.00*
No. 1 Busheling.	21.00*
No. 1 Bundles.	21.00*
No. 2 Bundles.	17.00-17.50
No. 3 Bundles.	16.50-17.00
Heavy Turnings.	15.50-16.00
Machine Shop Turnings.	13.00-13.50†
Mixed Borings, Turnings.	13.00-13.50†
Short Shovel Turnings.	16.50-17.00*
Cast Iron Borings.	17.50-18.00
Bar Crops and Plate.	21.00-21.50
Low Phos. Steel.	23.00-23.50

Cast Iron Grades†

No. 1 Cupola Cast.	22.00-22.50
No. 1 Machinery Cast.	27.00-27.50
Charging Box Cast.	21.00-21.50
Heavy Breakable Cast.	20.00-20.50
Brake Shoe.	21.00-21.50

Railroad Scrap

No. 1 R.R. Heavy Melt.	22.00
Axles.	23.50-24.00
Rails, Random Lengths.	22.00-22.50†
Rails, 2 ft. and under.	26.00-26.50
Rails, 18 in. and under.	27.00-27.50
Railroad Specialties.	24.00-24.50
Angles, Splice Bars.	23.00-23.50
*Nominal.	
†Brokers' buying prices.	
‡Crushers' buying prices.	

CLEVELAND

Heavy Melt. Steel.	\$14.50-15.50
No. 1 Busheling.	14.50-15.50
No. 2 Bundles.	12.50-13.50
Machine Shop Turnings.	8.50-9.50
Mixed Borings, Turnings.	14.00-14.50
Short Shovel Turnings.	14.00-14.50
Cast Iron Borings.	14.00-14.50
Bar Crops and Plate.	16.00-17.00
Punchings & Plate Scrap.	15.00-17.00
Cut Structural.	17.00-18.00

Cast Iron Grades†

No. 1 Cupola.	23.50-24.50
Charging Box Cast.	18.50-19.50
Stove Plate.	17.50-18.50
Heavy Breakable Cast.	15.50-16.50
Unstripped Motor Blocks.	14.50-15.50
Malleable.	17.50-18.50
Brake Shoes.	18.50-17.00
Clean Auto Cast.	26.50-27.00
No. 1 Wheels.	21.50-22.50
Burnt Cast.	14.50-15.50

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00-21.00
R.R. Malleable.	20.00-21.00
Rails, 3 ft. and under.	27.00-28.00
Rails, Random Lengths.	24.00-25.00
Cast Steel.	24.00-25.00
Railroad Specialties.	24.00-25.00
Uncut Tires.	23.00
Angles, Splice Bars.	26.00
† Nominal.	

VALLEY

Heavy Melt. Steel.	\$18.50
No. 1 Bundles.	18.50
No. 2 Bundles.	15.50
Machine Shop Turnings.	10.00-10.50
Short Shovel Turnings.	16.00-17.00
Cast Iron Borings.	18.00-17.00
Low Phos.	19.50-20.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.50-21.00
-----------------------------	-------------

MANSFIELD

Machine Shop Turnings.	\$10.00-10.50
Short Shovel Turnings.	14.00-14.50

CINCINNATI

No. 1 Heavy Melt. Steel.	\$18.00
No. 2 Heavy Melt. Steel.	17.00
No. 1 Busheling.	17.00
No. 1 Bundles.	18.00
No. 2 Bundles.	16.00
Machine Shop Turnings.	8.00
Mixed Borings, Turnings.	8.00
Short Shovel Turnings.	8.00
Cast Iron Borings.	9.00

Cast Iron Grades

No. 1 Cupola Cast.	27.00
Charging Box Cast.	21.00
Heavy Breakable Cast.	18.00
Stove Plate.	15.00
Unstripped Motor Blocks.	15.00
Brake Shoes.	15.00
Clean Auto Cast.	27.00
Drop Broken Cast.	30.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00
R.R. Malleable.	17.00
Rails, Rerolling.	21.00
Rails, Random Lengths.	19.00
Rails, 18 in. and under.	30.00

DETROIT

(Brokers' buying prices,
f.o.b. shipping point)

No. 1 Bundles.	\$14.50-15.00
No. 2 Bundles.	11.00-11.50
No. 2 Heavy Melt. Steel.	11.50-12.00
No. 1 Busheling.	14.50-15.00
Machine Shop Turnings.	8.00-8.50
Mixed Borings, Turnings.	8.00-8.50
Short Shovel Turnings.	9.50-10.00
Cast Iron Borings.	9.50-10.00
Punchings & Plate Scrap.	14.50-15.00

Cast Iron Grades

No. 1 Cupola Cast.	20.00-21.00
Heavy Breakable Cast.	16.00-17.00
Clean Auto Cast.	20.00-21.00

BUFFALO

No. 1 Heavy Melt. Steel.	\$19.00-19.50
No. 2 Heavy Melt. Steel.	17.00-17.50
No. 1 Bundles.	17.00-17.50
No. 1 Bushelings.	17.00-17.50
No. 2 Bundles.	15.00-15.50
Machine Shop Turnings.	10.50-11.00
Mixed Borings, Turnings.	10.50-11.00
Cast Iron Borings.	14.00-14.50
Short Shovelings.	14.00-14.50
Low Phos.	19.50-20.50

Cast Iron Grades

No. 1 Cupola.	22.00-23.00
Mixed Yard.	20.00-21.00
Heavy Breakable.	17.00-18.00
Malleable.	19.00-19.50
Clean Auto Cast.	22.00-22.50

Railroad scrap

Rails 3 ft. and under.	29.00-30.00
Scrap rails.	24.00-25.00
Specialties.	2.00-26.00

PHILADELPHIA

No. 1 Heavy Melt. Steel.	\$17.00
No. 2 Heavy Melt. Steel.	16.00
No. 1 Busheling.	17.00
No. 1 Bundles.	17.00
No. 2 Bundles.	14.50-15.00
Machine Shop Turnings.	10.50-11.00
Short Shovel Turnings.	13.00-13.50
Mixed Borings, Turnings.	10.00-10.50
Bar Crop and Plate.	20.00-21.00
Punchings & Plate Scrap.	21.00-22.00
Cut Structural.	20.00-21.00
Elec. Furnace Bundles.	17.00
Heavy Turnings.	17.00
No. 1 Chemical Borings.	Nom.

Cast Iron Grades

No. 1 Cupola Cast.	24.00
No. 1 Machinery Cast.	26.00-27.00
Charging Box Cast.	22.00-22.50
Heavy Breakable Cast.	21.00-22.00
Unstripped Motor Blocks.	18.00-19.00
Clean Auto Cast.	26.00-27.00
No. 1 Wheels.	26.00-27.00

NEW YORK

(Brokers' buying prices f.o.b.
shipping point)

No. 1 Heavy Melt. Steel.	\$11.00-11.50
No. 2 Heavy Melt. Steel.	10.00-10.50
No. 1 Busheling.	10.00-10.50
No. 1 Bundles.	11.50-12.50
No. 2 Bundles.	9.00-9.50
No. 3 Bundles.	nominal
Machine Shop Turnings.	4.00
Mixed borings, Turnings.	5.00-6.00
Short Shovel Turnings.	15.00
Punchings & Plate Scrap.	

Cut Structural. nominal
Elec. Furnace Bundles. 17.00

Cast Iron Grades

No. 1 Cupola Cast.	19.00-20.00
No. 1 Machinery.	20.00-21.00
Charging Box Cast.	17.00-17.50
Heavy Breakable.	17.00-17.50
Unstripped Motor Blocks.	nom.
Malleable.	nom.

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel.	\$12.50-13.00
No. 2 Heavy Melt. Steel.	10.50-11.50
No. 1 Bundles.	12.00-13.00
No. 1 Busheling.	9.50-10.00
Machine Shop Turnings.	5.00-5.50
Mixed Borings, Turnings.	4.50-5.00
Short Shovel Turnings.	6.00-6.50
Bar Crops and Plate.	14.00-15.00
Punchings & Plate Scrap.	14.00-15.00
Chemical Borings.	10.50-11.00

Cast Iron Grades

No. 1 Cupola Cast.	19.00-20.00
Mixed Cast.	18.00-19.00
Heavy Breakable Cast.	17.00-18.00
Stove Plate.	18.00-19.00
Unstripped Motor Blocks.	16.00-17.00

CHICAGO

No. 1 Heavy Melt. Steel.	\$19.00-20.00
No. 2 Heavy Melt. Steel.	17.00-18.00
No. 1 Bundles.	19.00-20.00
No. 2 Bundles.	15.00-16.00
No. 3 Bundles.	12.00-13.00†
Machine Shop Turnings.	12.00-13.00
Mixed Borings, Turnings.	9.00-10.00
Short Shovel Turnings.	13.00-14.00
Cast Iron Borings.	12.00-13.00
Bar Crops and Plate.	19.00-20.00†
Punchings.	19.00-20.00†
Elec. Furnace Bundles.	19.00-20.00†
Heavy Turnings.	17.00-18.00
Cut Structural.	20.00-21.00

Cast Iron Grades†

No. 1 Cupola Cast.	27.00-28.00
Clean Auto Cast.	27.00-28.00
No. 1 Wheels.	27.00-28.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00-21.00
Malleable.	22.00-23.00†
Rails, Rerolling.	27.50-28.00
Rails, Random Lengths.	22.00-23.00
Rails, 2 ft. and under.	28.00-29.00
Rails, 18 in. and under.	29.00-30.00
Railroad Specialties.	23.00-24.00
Angles, Splice Bars.	23.00-24.00
† Nominal	

ST. LOUIS

No. 1 Heavy Melt. Steel.	\$18.00-19.00
No. 2 Heavy Melt. Steel.	17.00-18.00
Machine Shop Turnings.	9.00-11.00
Short Shovel Turnings.	9.00-11.00

Cast Iron Grades

No. 1 Cupola Cast.	24.00-25.00
Charging Box Cast.	20.00-22.00
Heavy Breakable Cast.	19.00-20.00
Brake Shoes.	19.00-20.00
Clean Auto Cast.	28.00-29.00
Burnt Cast.	20.00-21.00

Railroad Scrap

R. R. Malleable.	19.00-20.00
Rails, Rerolling.	25.00-26.00
Rails, Random Lengths.	21.00-22.00
Rails, 3 ft. and under.	25.00-26.00
Uncut Tires.	18.00-19.00
Angles, Splice Bars.	24.00-25.00

BIRMINGHAM

No. 1 Heavy Melt. Steel.	\$18.00
No. 2 Heavy Melt. Steel.	18.00
No. 1 Busheling.	18.00
No. 2 Bundles.	16.00
No. 3 Bundles.	14.00
Machine Shop Turnings.	14.00
Mixed Borings, Turnings.	15.00
Short Shovel Turnings.	15.00
Cast Iron Borings.	15.00
Bar Crops and Plate.	25.00-26.00
Cut Structural.	25.00-26.00

Cast Iron Grades

No. 1 Cupola Cast.	33.00-34.00
Stove Plate.	30.00-31.00
No. 1 Wheels.	30.00-31.00

STEELMAKING SCRAP COMPOSITE

July 9.	\$19.17
July 2.	19.50
May 1949.	22.29
June 1948.	40.67
June 1944.	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00-21.00
R.R. Malleable.	nominal
Rails, Rerolling.	30.00-32.00
Rails, 3 ft. and under.	31.00-32.00
Angles and Splice Bars.	31.00-32.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel.	\$20.00
No. 2 Heavy Melt. Steel.	18.00
Nos. 1 & 2 Bundles.	16.00
Machine Shop Turnings.	12.00

Cast Iron Grades

No. 1 Cupola Cast.	25.00-30.00
-------------------------	-------------

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00
Wheels.	20.00
Rails, Random Lengths.	20.00

SEATTLE

No. 1 Heavy Melt. Steel.	\$17.00
No. 2 Heavy Melt. Steel.	17.00
No. 1 Bushelings.	17.00
Nos. 1 & 2 Bundles.	15.00
No. 3 Bundles.	nom.
Machine Shop Turnings.	12.00
Mixed Borings, Turnings.	12.00
Punchings & Plate Scrap.	20.00
Cut Structural.	20.00
Elec. Furnace Bundles.	25.00

Cast Iron Grades

No. 1 Cupola Cast.	23.00
Heavy Breakable Cast.	17.00
Stove Plate.	20.00
Unstripped Motor Blocks.	20.00
Malleable.	23.00
Brake Shoes.	23.00
Clean Auto Cast.	20.00
No. 1 Wheels.	22.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	18.00
Railroad Malleable.	22.00
Rails, Random Lengths.	18.00
Angles and Splice Bars.	18.00

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	\$20.00
No. 2 Heavy Melt. Steel	18.00
Nos. 1 & 2 Bundles...	16.00
No. 3 Bundles	nom.
Machine Shop Turnings	12.00
Mixed Borings, Turnings	12.00
Punchings & Plate Scrap	24.00
Electric Furnace Bundles	26.00

More Protection!

AO
Nose Shield
for
F3100 Goggle

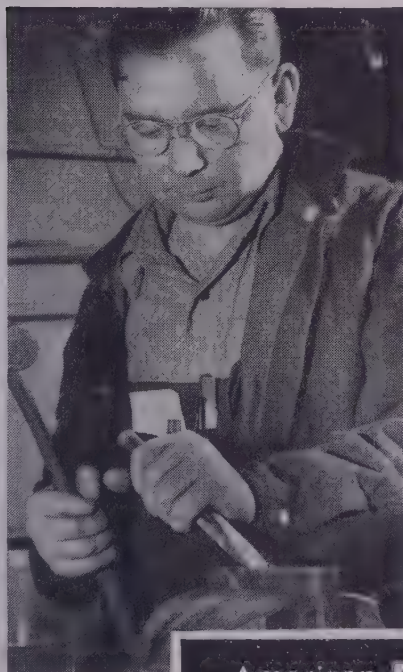
AO PRESENTS A NEW
NOSE SHIELD



FOR THE F3100 GOGGLE

Refresher Facts on the Goggle

- **TYPE — FUL-VUE METAL SPECTACLE**
- **UNOBSTRUCTED VISION**—High set endpieces take hinges and temples out of line of sight. High position of endpieces keeps goggles up on nose, adds to appearance.
- **ORBIT-SHAPED LENSES**—Conform to eye shape. Frame fits closer for maximum protection.
- **ROCKING NOSE PADS**—Universal pivot-support permits pads to adjust to nose. Very comfortable—large size of pads distributes pressure.
- **INSULATED TEMPLES**—Perspiration proof, heat resistant.
- **SIDE SHIELDS**—Perforated, wire mesh, easily cleaned — available for protection against laterally striking particles.
- **6 CURVE SUPER ARMORPLATE LENSES**—Clear or Calobar in medium, dark and extra dark shades.



AO adds to this highly practical goggle the extra protection of a nose shield available in *screen mesh*, *clear acetate* and *green acetate* to prevent particles attacking the eyes through the nasal area. The shield fits snugly over the goggle's double-braced bridge—clamps tight with three soft metal prongs. Available in two sizes and supplied separately or with goggles.

**Order from your nearest
AO Safety Products Representative**

American Optical
COMPANY
SAFETY PRODUCTS DIVISION

Southbridge, Massachusetts • Branches in Principal Cities

Stainless Steel Extras

Pittsburgh — Armco Steel Corp., Middletown, O., has revised extras for the polishing of stainless steel sheets. The revision, effective with shipments of July 1, will result in savings to customers amounting to an average of about 30 per cent on polishing extras, according to a company spokesman. Extras for boxing and adhesive paper protection for all Armco stainless steel products were also adjusted downward; the former, $\frac{1}{2}$ to $1\frac{1}{2}$ cents and the latter, 2 to $15\frac{1}{2}$ cents.

Competitive conditions within the industry undoubtedly will force other producers to follow Armco's action in reducing these extras.

New demand for stainless has held up fairly well in recent weeks in contrast to diminishing order volume for carbon and alloy specialty items. However, sellers' delivery promises are limited only to extent of time required to process the material, which in case of some analyses require 4 to 5 weeks.

American Cladmetals Co., Carnegie, Pa., reduced its base prices on stainless clad copper, effective June 1, and established base prices for Inconel, nickel and monel-clad copper grades. Finishing extras for all grades have been reduced from 9 cents to 5 cents per pound. Standard sheets 24 to 36 inches wide by 60 to 96 inches long, below 14 gage are now considered base in respect to gage and width extras; for 14 gage and lighter the gage extras have been reduced 2 to 6 cents per pound. Quantity extras also were reduced from 4 to 20 cents per pound for under 10,000 pounds; 10,000 pounds and over now being considered base. Formerly 40,000 pounds and over was base.

Company's new base prices are listed below.

Base Prices (Cents Per Pound)		
Stainless Clad Copper Type	Aug. 31 1948	June 1 1949
302	78.00	75.00
304	81.00	77.00
305	84.00	79.00
308	84.00	79.00
347	94.00	94.00
310 .....	.....	105.00
321 .....	.....	90.00
Inconel Clad Copper .....	.....	115.00
Nickel Clad Copper .....	.....	88.00
Monel Clad Copper .....	.....	83.00

Tin Plate . . .

Tin Plate Prices, Page 131

Pittsburgh—Extension of governmental controls over tin was authorized last week. However, trade authorities anticipate further easing in regulations under tin orders M-81 and M-43; there is some prospect that all controls may be abandoned before June 30, 1950. Tin plate producers' stocks are not being enlarged at the rate reported throughout May and early June. Sellers contend they are still able to readily move "excess" tonnage, although bulk of rejects and secondary quality items now must be scrapped. Demand continues to exceed supply for electrolytic tin plate, while the reverse is true for hot-dipped. Few sellers are willing to predict full production sched-

ules beyond the third quarter. More strip in tin mill grades undoubtedly could be made available for tin plate this quarter, but it is doubtful if volume of new orders will warrant stepping up operations.

Sheets, Strip . . .

New orders down but producers feel inventory trimming limit has been reached

Sheet Prices, Page 130

Chicago — Since quantitative figures showing scope of the sag in steel demand are impossible to determine, indications obtained from individual producers are the next best thing. Two major district mills report receipt of new orders is roughly 30 per cent lower, one saying this was the decline registered between May and June, the other indicating this is about the amount of reduction in operations which would be necessary if the order backlog prop were suddenly removed. However, with sizable carryovers on nearly all products at one of those mills no early decline in its operating rate is in prospect, nor is abandonment of its quota system likely. No trend is yet discernible as to August business. Many producers think the limit to inventory reduction has about been reached, and believe that present consumer intake is well below consumption, making reordering fairly imminent.

Meanwhile, continued lag in demand for hot-rolled sheets and strip has brought about virtual balance with supply; however, cold-rolled sheets and strip and galvanized are still tight. Indications now point to better demand from appliance makers, several reporting that production is turning up. This presumably will be reflected in better volume of electrical and enameling sheets, as well as other steel and cast iron items. Several producers last week noted more hedge buying in anticipation of steel strike. This is by no means pronounced, and in many cases difficult to prove, but feeling nevertheless is that some new business is definitely attributable to it.

Boston—A return to basing point system, allowing producers to absorb freight, would be welcomed by mills who withdrew from this territory and now are seeking to return; this has been difficult with consumers paying freight costs. Flat-rolled steel demand is slow, notably new buying with considerable July tonnage deferred through August. Cold strip orders also lag with deliveries back to normal on most grades as supply of hot-rolled strip gets into balance for processing. Most specialties are slow, especially silicon grades.

Two Connecticut producers of cold-rolled strip, effective July 1, went on a New York city base at 4.50c.

Philadelphia — Reduction of approximately 30 per cent in extras for polishing stainless sheets is announced by one mill. Expected revisions in extras on other grades have not developed.

Buying of flat-rolled material is confined largely to spot lots with delivery often a factor in placing or-

ders. Deliveries on carbon sheets are booked into September on hot-rolled at one plant and six weeks ahead at another. Of flat-rolled products, galvanized is most extended with September schedules partially filled. However, there is a lag in new buying of this grade and most sellers will be caught up by start of final quarter. There are openings for August on cold-rolled carbon sheets.

Pittsburgh—Light gage galvanized sheets remain in tightest supply among sheet and strip items, a situation which may be further aggravated by scheduled increase in shipments for the grain storage program. A fairly tight delivery situation still prevails in enameling and cold-rolled sheets although delivery promises on these two items have substantially improved in recent weeks. Hot and cold-rolled strip, silicon and plain hot-rolled sheets are available within normal lead time for processing by the mills.

All of the non-integrated cold-rolled strip producers are now quoting on competitive basis. Threatened steel strike has not stimulated new buying noticeably to date this month although sellers readily admit new ordering throughout June undoubtedly was favorably affected by this factor. Many metalworking concerns apparently reason they are faced with similar strike prospect.

Cincinnati—Schedules for district sheet mills are fairly well filled for July, with a degree of stringency still noted in galvanized—demand upped sharply by the grain bin program—and in cold-rolled. Volume for August is undetermined at this time, with hand-to-mouth buying possible. Mills on hot-rolled and the open hearths at Newport, Ky. were out of production for one week in a vacation move. The operator—International Detrola Corp.—also has idled a blast furnace at Martin's Ferry, O., after a reserve of pig iron was stacked.

St. Louis—Demand for cold-rolled sheets, on the decline for two months, has unexpectedly strengthened. It is regarded as temporary, however, because a number of consumers have re-ordered to replenish inventories which had dropped too low for safety. Most mills expect the decline to resume during third quarter. More cold-rolled sheet orders were booked the first week of July than in any similar period in many months. Granite City Steel Co.'s cold-rolling mill will be down for repairs another week. Equipment meanwhile has been diverted to roofing. The mill continues to try to reduce coil stocks, now 20 per cent above the level it had hoped would be reached by July 1.

Los Angeles—Fact that mills here did not utilize the holiday period for mass vacations is pointed to by some observers as an indication that demand in this area still is fairly solid. A wildcat strike at Columbia Steel Co.'s Pittsburgh plant, that began on the electrolytic tinning line and spread into other departments, has now been settled and the mill is back in production.

San Francisco—Demand for flat-rolled products shows no signs of picking up. Ordering for third quarter delivery is light, reflecting an apparent determination of users to stay on

a hand-to-mouth basis. Relative tightness in galvanized sheets continues to ease.

Steel Bars . . .

Bar Prices, Page 130

Philadelphia—That carbon bar inventories are being worked down gradually is indicated by decline in cancellations and forward order revisions, although new buying is spotty. Improvement in deliveries offers slight incentive for forward buying while leading consuming industries are operating at lower rate. Only automobile industry maintains bar demand, duplicating a situation pertaining to other steel products. Producers of cold-finished in more cases have built up mill stocks to a point where some further reductions in production schedules are in effect.

Boston—Cold finishing production schedules have been reduced further with demand light; producers have built balanced stocks in most cases and are filling spot orders from inventory. Hot-rolled carbon deliveries have improved materially with August schedules wide open. With hardly an exception, industries consuming bar stock have curtailed sharply, operating at lower levels; some shops producing for the automotive trade are less affected than others.

New York—Substantial mill stocks coupled with lack of orders has resulted in lower cold-finished production schedules and an easing in demand for hot-rolled. Consumers are operating off inventory, but revisions and adjustments in orders on mill books have subsided. Considerable tonnage has been deferred to August and September. Alloy demand is slow and deliveries range from two to three weeks with some material available from stock. Warehouse orders for bars are light with distributor inventories generally substantial.

Pittsburgh—Distribution of cold-finished bars within standard size classifications are available now from stock in many instances in contrast to the requirement of six months' lead time earlier this year. There are some indications that consumers have reduced inventories in line with depressed operating schedules and relatively prompt deliveries are now available from suppliers. However, most cold finishers do not anticipate any significant improvement in demand before early fall. Supply of hot-rolled carbon and alloy bars are more than adequate to sustain current cold finishing operations.

Chicago—Excluding specialties, easiest steel product to obtain quickly is carbon bars, both hot-rolled and cold-finished. Mills specializing in these items generally are fully booked for July, although possibility of getting delivery this month on some newly placed orders is definitely present. Orders stretching beyond this month are extremely limited at most district mills. Despite their wide application in diverse metal-working lines, lack of bar demand is believed to stem largely from softening conditions in those industries which did not enter the postwar period with overly large pent-up demand. Another cause of the situa-



consult
**JOHNSON
BRONZE**
Engineers
on bearing
problems

WHILE fully 90% of your sleeve bearing requirements are available from stock, Johnson Bronze can furnish all styles of sleeve bearings for special applications. Johnson engineers are working constantly with manufacturers on research and on designing bearings for specific uses. They are capable and ready to advise you on the right style and correct design for economical and efficient service on any equipment you produce. These bearing specialists have designed Johnson Bearings for other manufacturers at 20% to 50% of the cost of other types and have helped reduce installation and maintenance costs. If you have a bearing problem of any kind, consult the Johnson Bronze representative in your territory about this engineering service, or write direct.

BRONZE and
BABBITT



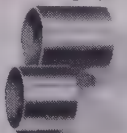
STEEL and
BABBITT



SHEET BRONZE
Plain or graphited



CAST BRONZE
Plain or graphited



BRONZE
ON STEEL
Plain or graphited



tion—bars having been in sharp contrast with that experienced in sheets, plates, structurals and pipe—is the relatively large number of bar makers. Presently, demand from forgers doing business with the automotive industry is being curtailed, that industry showing more inventory caution than previously.

Plates . . .

Plate Prices, Page 131

New York—Mills vary considerably as to plate deliveries, ranging from two weeks to through August. Bulk of spot buying is for prompt delivery with nearest shipment prime factor in placing volume. While one eastern mill has August schedules well taken up and is currently taking orders for September, this is an exception to general rule. Shipbuilding accounts for a steady volume, but suppliers are up to schedule in most cases.

Boston—Decline in demand for heavier plates is sharp, notably weldment requirements. Light tank shop schedules are lower with fabricators depending on inventories and buying fill-in lots. Buying is marked by absence of forward orders. Deliveries have improved to the point where some mills are stocking plates in wider range of sizes. Floor plate and clad material follows general trend with warehouses well balanced on the former.

Lower demand for steel plate and plate specialties has resulted in furloughing an additional 150 employees by Lukens Steel Co., Coatesville, Pa. Most of them are from Lukenweld division. Luken's 120-inch four-high mill resumed production July 6; mill went down June 19 for overhauling and repairs.

Philadelphia—Plate buying is light and spotty. Order placement frequently revolves around delivery and most consumers make inquiries for small lots on which shipment is wanted in two to three weeks. As result of this type of buying, substantial volume is being shipped by truck. For most part, users of plates are operating on inventories which are not large as rule. Their rate of consumption, however, is considerably lower, but even mild upturn in operations which might be expected after vacations would force many users to place additional tonnage.

Seattle—Plate fabricators report business slow and backlogs nearly exhausted. The material situation is easy. Several large projects are pending, including 1500 tons for the Nome breakwater and an unstated tonnage for a proposed Standard Oil Co. pipeline from Salt Lake City to Boise, Idaho, and thence into western Washington.

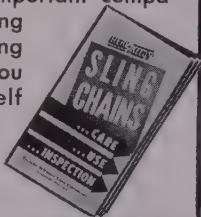
Rails, Cars . . .

Track Material Prices, Page 131

Tacoma—Quarterly meeting of the Pacific Northwest Advisory Board received estimates that 23,849 fewer railroad cars will be required in the Pacific Northwest area in the third quarter compared with the corresponding period 1948. Figures are 284,410 and 308,259, respectively. Sharpest decline in shipments is ex-

● Just one of the big advantages of HERC-ALLOY Sling Chains is that you can determine their serviceability by a simple visual inspection.* Ordinary steel or iron chains, on the contrary, grow dangerously brittle with age... an insidious threat to the safety of men and materials. That's why more and more of the important companies are standardizing on HERC-ALLOY Sling Chains... because you can see for yourself that they're safe.

*Write for your copy of this new, informative booklet. No charge.



HERC-ALLOY FEATURES

- America's first alloy steel sling chain... first to bear a serial number.
- Every CM HERC-ALLOY Sling Chain is alloy steel throughout...links, rings, hooks. There is only one grade... the best.
- Every chain is individually tested and accompanied by a certificate of registration.
- Links are side welded for maximum strength by patented INSWELE electric method.
- HERC-ALLOY Chains should never be annealed.
- HERC-ALLOY Chains are lighter...stronger... easier to handle...outlast ordinary chains 4 to 5 times...cost less on the job.

HERC-ALLOY...the chain you can SEE is safe

COLUMBUS-McKINNON

CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corporation)

GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.
SALES OFFICES: New York • Chicago • Cleveland • San Francisco • Los Angeles

pected in dried fruits and vegetables, metal scrap, aluminum, iron and steel, wood, coal and coke, furniture, packing house products, dairy products, chemicals and explosives, railway track machinery, fir logs, hay, machinery and boilers. Grain shipments are expected to be normal and increases are predicted for apples and agricultural implements.

Wire . . .

Wire Prices, Page 131

Pittsburgh—Supply of merchant and manufacturers' wire will tighten somewhat over the next few weeks as a result of the two-week vacation shutdown at American Steel & Wire Co.'s mills. However, the company's customers have closed their plants, where possible, for the identical initial two weeks of July.

Jobbers' stocks of merchant wire items are larger than anticipated, reflecting failure of seasonal demand to develop. Output of nails, notably smaller sizes, has been well sustained. Some improvement is noted also in requirements for spring wire.

New York—Wire buying is spotty although more small miscellaneous orders are appearing which might indicate inventories are being worked down to point where gaps are developing. Rates of operations among consumers in same line of industry vary considerably. Outstanding is sustained demand for wire for production of wire wool by two of largest producers of this product in New York City area. Considerable volume held up for July shipment is expected to be released for August. Rod supply is ample.

Chicago—Outstanding exception to the lightness of wire demand generally is the situation in automotive upholstery wire, which continues to be sought in quantity. Merchant items for the most part are slow moving and wire rope requirements have suffered a setback because of the unsettled status of coal mining activity. A little improvement in buying spring wire for furniture upholstery has been noted and several companies in this field say their business now is above their earlier expectations.

Tubular Goods . . .

Tubular Goods Prices, Page 131

Chicago—Contrary to the general trend, demand for standard pipe continues at a high level and bookings are full into September. According to one producer, jobbers are unable to expand their stocks and are just barely able to keep abreast of current requirements. This situation is reflected in the continued need for customer quotas at this mill. Specialty items and mechanical tubing, however, are in restricted demand, only a few outlets maintaining their order volume at a normal level, and others continuing to reduce stocks and buy for spot needs.

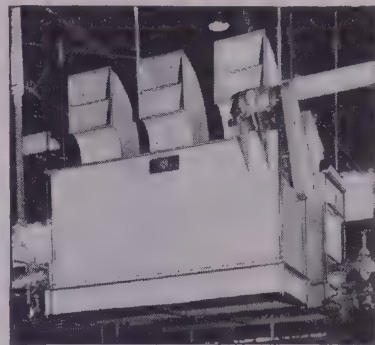
Improved supply of semifinished steel will make it possible for National Tube Co., this city, to step up operations at its No. 2 seamless pipe mill, McKeesport, Pa., on July 10 from the present 6-day to a 7-day work-week basis.

San Francisco—A short-lived walk-

New HIGH PRESSURE STEAM Fan Heater

Gives Savings You Never Had Before

The first heater to make High Pressure Steam really trouble-free and practical in plant heating. Every engineer should understand its original method; write for Niagara Bulletin and performance data.



HOW IT OPERATES:—A dual coil system makes use of all heat, both sensible and latent. High pressure steam enters the upper coil, shown on the diagram below. Its condensate drains into a trap. Then this high pressure condensate is released into the header of the lower coil. It instantly flashes into steam at vapor pressure.

Any high pressure condensate that remains liquid is carried to the vapor condensate return header by a drain tube that also gives off its heat into the air stream.

The vapor condenses in the lower coil. Its condensate is kept at a high level in the return leg by a wiper in the return header so that all its heat is made useful and it is sub-cooled by contact with the coldest air entering the heater. Vacuum condensate return to boiler is vapor free.

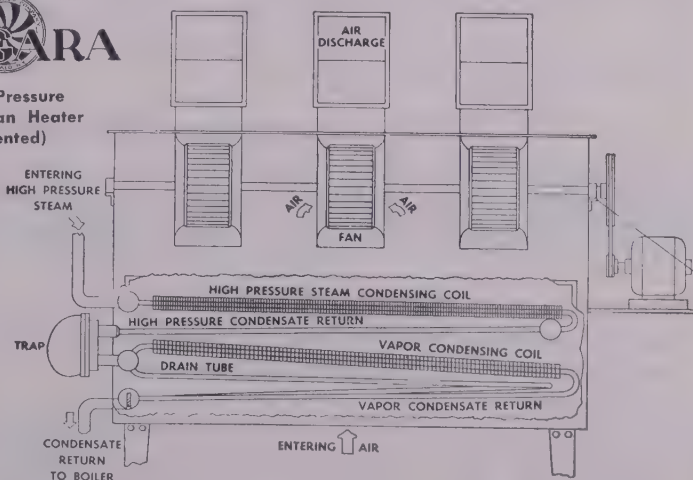
HOW IT SAVES IN COST:—Piping is much simpler and less costly than in low pressure systems. Much secondary piping, traps and big valves are not needed. Pipe sizes are smaller.

HOW IT SAVES IN OPERATION:—Waste is prevented. Every BTU goes where you want it. No dump traps or hot wells waste live steam.

HOW IT SAVES IN UPKEEP:—Condensate flow is even, vapor free, easily handled. No sudden surges of condensate in starting. No hammering, no hard wear and tear on system. Properly engineered for the job, final air temperatures are not excessive; heat easily directed where needed; no flashing of low pressure condensate. Heaters are self-draining on shut-down. Heaters are strongly built; all coils including the condensate drain tubes are hairpin bend, stress relieving. Use thru four heating seasons has proven these advantages in large scale plant heating.



High Pressure
Steam Fan Heater
(Patented)



NIAGARA BLOWER COMPANY

Dept. S, 405 LEXINGTON AVE., NEW YORK 17, N. Y.

Please send Bulletin 109 on the Niagara High Pressure Steam Fan Heater.

Name

Address



**THEY GO
ALMOST
ANYWHERE!**

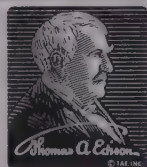
BECAUSE THEY ARE QUIET and fume-free, battery industrial trucks can be used in virtually any part of the plant. They can even be provided with spark-enclosed construction if fire and explosion hazards exist.

They use low-cost electric power and use it with peak efficiency ... starting instantly, consuming no power during stops. Their electric motors have few wearing parts; are easy to maintain; rarely need repairs. Thus they have inherent economy and dependability.

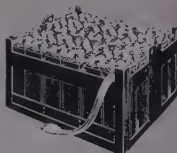
They are doubly dependable and economical when powered by EDISON Nickel-Iron-Alkaline Storage Batteries. These are the longest-lived and most durable of all batteries, with steel cell construction, electrolyte which is a preservative of steel, and a foolproof principle of operation.

If you do not already use EDISON, get a current price quotation—you will probably find initial cost *much lower* than you think. Couple this factor with well-known EDISON long life and you will have the key to year-after-year economy.

ADVANTAGES OF EDISON NICKEL-IRON-ALKALINE BATTERIES:
They're mechanically durable; electrically foolproof; quickly and easily charged; simple to maintain; not injured by standing idle.



EDISON
Nickel • Iron • Alkaline
STORAGE BATTERIES



EDISON STORAGE BATTERY DIVISION
of Thomas A. Edison, Incorporated, West Orange, N. J.
In Canada: International Equipment Co., Ltd., Montreal and Toronto

out disrupted operations of Columbia Steel Co.'s sheet and tin plate mill at Pittsburg, Calif., late last month. The five-day stoppage began when an operator on the electrolytic line refused to increase production from 400 feet a minute to 450 feet. He was suspended and other workers on the line were sent home. Operators of other shifts then refused to work the line and operations were suspended. About 225 men were affected. The company explained that since December when the line began operation it has been worked at "shake-down" speeds to familiarize crews and to make adjustments. This rate was below the potential, and speeding up of the line was a normal step to bring it nearer normal operating conditions.

Spokane—Following approval of board of directors, early construction is reported planned for Standard Oil's proposed 8-inch oil pipe line from the Salt Lake City refinery to Washington state probably with terminal at Pasco. The route is via Boise, Idaho. Cost estimates are said to be \$12 million. The utility will serve four states and is planned to offset rail rates which are declared too high.

Reinforcing Bars . . .

Fabricators eating into backlogs. New awards and inquiries are for small tonnages.

Reinforcing Bar Prices, Page 130

Chicago—Most fabricators are eating into their order backlogs, although these for the most part are still at comfortably high levels. Bulk of new inquiry and awards is for relatively small tonnages, and a very considerable number of these are now active. Steel shortage has virtually ended although demand is holding up well. A few fabricators are well booked, particularly on government dam projects, and take little interest in new inquiries, but these are exceptions, other members of the industry making active efforts to book new business. Featuring last week's activities were public projects: a tuberculosis hospital to be built in Chicago for the state, requiring 756 tons of concrete bars; and the interns' and residents' building, Cook county hospital, requiring 594 tons. Awards on both jobs are now pending.

Los Angeles—With western engineering awards well ahead of last year, requirements for reinforcing continue in good volume. Contract awards in the 11 western states during the first half of 1949 totaled \$1,208,903,906, compared with \$926,381,598 last year. Contracts have been placed by the Los Angeles Department of Water and Power for completion of its \$4,500,000 Baldwin Hills reservoir.

Seattle—Rolling mills are reducing backlogs slowly, although demand for reinforcing bars has not declined drastically. Tonnages of less than 100 tons each are numerous. Area production has dropped as Northwest Steel Rolling Mills Inc.'s plant is still idle due to labor troubles. No outstanding jobs are pending.

Structural Shapes . . .

Sharp competition returns for structural work. Lower bids submitted on small jobs.

Structural Shape Prices, Page 131

Boston—Competition for structural fabricating contracts is back in full force; both small and large tonnage jobs are included with lower prices covering the former. Projects ranging from 100 to 250 tons are bringing out bids nearly one-half lower than appeared earlier this year. District shops are behind on delivery due to labor troubles, but have no worry as to plain material in sizes wanted. New inquiry is lower, but includes numerous small bridges with bids on one larger span, Salem, Mass., due July 19.

New York—Bridge contracts account for a flurry in structural awards, including 3000-ton bascule superstructure, Manasquan river, New Jersey, material to be fabricated at Trenton, N. J. Bulk of 6000 tons required for New York state highways, bids June 22, has been distributed. While competition is keener for fabricating contracts, price effect is more apparent among shops bidding for smaller and medium-sized tonnages. Price plus delivery is a factor in placing most contracts in this category. Private work inquiry lags, but is balanced generally by an increase in public building and engineering projects.

Philadelphia — Decline in private building and engineering contracts is partially offset by public work, but fabricating shop backlogs are gradually shrinking. Prices for fabricated and erected material are somewhat lower, and shops are able to make savings by ability to order more exact sizes, thus eliminating some extra cutting. Plain material deliveries range from three to four weeks, and some mills are building up moderate stocks for prompt shipment. For bridge work, closing at Harrisburg, July 22, approximately 23,810 sq ft of steel beam bridge flooring is included, mostly five-inch.

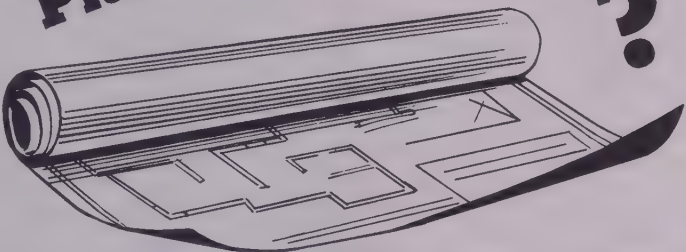
Cincinnati — Vacations of fabricators are reflected in lighter demand for steel from warehouses. Requirements for buildings continue disappearing, principal construction being in homes. The slide in sales, compared with 1948 has been especially abrupt in secondary materials for which there is now little or no demand.

Salt Lake City—Geneva Steel Co. has halted operation of its structural mill, giving lack of orders as reason for the temporary shutdown. Of the working force of 180, about 100 men will be transferred to other departments and 80 will be laid off. Geneva now is operating two of its three blast furnaces, six of the nine open hearths, and the plate mill continues in full production.

Los Angeles — Although Geneva Steel Co. has closed down its structural mill during July, demand for shapes is holding at fair levels. Engineers of leading steel constructors are studying plans for the \$5 million aerial tramway to be built at Mt. San Jacinto, near Palm Springs,

Planning an addition
to present facilities?

Planning a brand new
PLANT



—You can use the
skill and practical experience of

FORT PITT BRIDGE

to good advantage

Yes—look to this skilled, experienced organization for practical advice and aid, or let our engineers work with you while plans are still in the formative stage.



FORT PITT BRIDGE WORKS

Member American Institute of Steel Construction

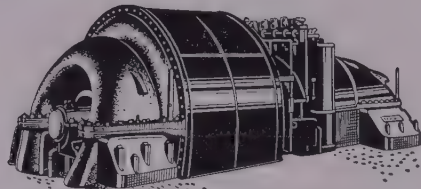
General Offices, Pittsburgh, Pa. • Plant at Canonsburg, Pa.

BRANCH OFFICES

New York, N.Y., 441 Lexington Ave.
Cleveland, Ohio, Bulkeley Building

Columbus, Ohio, Huntington Bank Bldg.
Detroit, Michigan, New Center Bldg.

Filtered Air solves blade erosion problem on Turbo-Blowers



WHY should the life expectancy of impellers in turbo-blowers be limited to six, nine or eighteen months? The reason—when quantities of abrasive dust and dirt, such as found in unfiltered air, are permitted to enter a high speed, rotary blower, rapid wear and erosion of the impeller is certain to result.

Installation of AAF Multi-Duty Air Filters at the blower intake has proven a practical solution to this problem. In one mill, where unfiltered air had completely ruined the impeller after 17,000 hours' operation, the replacement unit checked after 12,000 hours with Multi-Duty filtered air showed no trace of erosion.

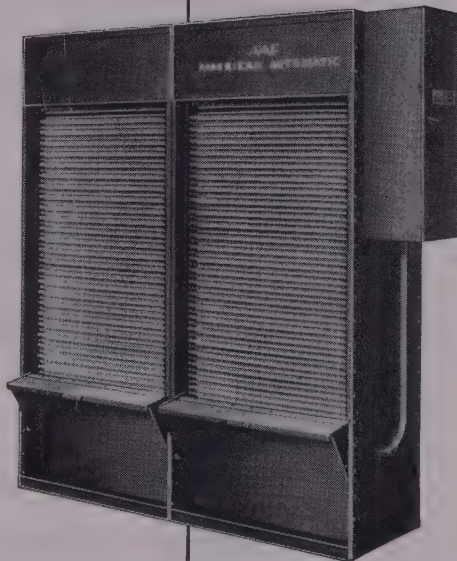
The AAF Multi-Duty is an automatic self-cleaning air filter. Overlapping panel construction of the filter curtain combines positive self-cleaning and high efficiency air cleaning as integral functions of the operating cycle. Uniformly constant air supply is assured as operating resistance remains fixed when once established for a given dust concentration.

The Multi-Duty's record of prolonging impeller life, eliminating costly repairs and untimely shutdowns warrants your immediate investigation. For complete information contact your local AAF representative or write direct to:

AMERICAN AIR FILTER COMPANY, INC.

443 Central Avenue, Louisville 8, Ky.

In Canada: Darling Bros., Ltd., Montreal, P. Q.



**AIR FILTERS
AND DUST CONTROL EQUIPMENT**

Calif. Based on ten 280-foot steel towers, the tramway will be one of the world's largest. Construction is to begin late this year, and will require 24 months to complete.

San Francisco—Bethlehem Pacific Coast Steel Corp. is filling an order for 7000 tons of structural steel for Pacific Gas & Electric Co.'s new steam-electric generating plant at Moss Landing, Calif. More than 2000 tons have been erected.

Seattle—Fabricators report a fair volume in small tonnages, backlogs reasonably large and operations normal. Materials are in ample supply and deliveries satisfactory.

Stainless Steel Building

Pittsburgh—A four-story office building, utilizing stainless steel for the exterior frame work, has been constructed for General Electric Co. at Schenectady, N. Y.

In "curtain-wall" construction of this type, a lower static load permits a lighter steel frame. In the General Electric building, the "curtain wall" is of 20 gage stainless steel sheets, fluted to aid appearance and to eliminate glare. Rectangular depressions 1½ inches deep are made in the panel sheet, which has a finished width of 24 inches and may be as much as 25 feet in length. These panels, of course, vary in length.

A thin sheet of asbestos is placed against the interior stainless steel surface to support a layer of fiber glass, and finally a flat 18-gage carbon steel sheet is added. All these are bolted together with stainless steel fasteners. The entire wall thickness is 3½ inches.

After being attached to the structural steel of the building, an inner wall is obtained by coating an expanded metal lath. From the outside of the building to the interior finish, there is a maximum of 13 inches of depth.

Pre-erection tests proved this type construction afforded insulation equal to a 12-inch masonry wall exterior, plus a normal plaster interior.

Steel Sales Lag in Northwest

Seattle — Sentiment among steel executives in this area is not unduly pessimistic, although their opinion is that demand for steel products has slowed too precipitately for an orderly overall readjustment. Much of the decline in steel business is attributed to the reluctance of consumers to purchase while steel mill wage negotiations are in progress. Buyers are holding off in expectation of a drop in basic steel prices, although they admit there seems little prospect of this as long as present wage scales are in effect. Some plants find themselves overstocked with high priced materials, the current drop in business having taken them aback. Gray market and premium items have disappeared.

As soon as the big operators have reached new wage contracts, it is expected that business will improve in the Pacific Northwest as it will then be possible to make future plans with more confidence. Northwest Steel Rolling Mills Inc.'s plant in Seattle is still down due to a wage scale impasse. This may be settled, follow-

ing conclusion of national negotiations. Much of the situation is attributed to psychological reaction as when materials were scarce, the demand was insistent. Now that supply and delivery are normal, buyers are not interested. This applies particularly to the cast iron pipe market. The potential demand for this item is of large proportions, but at the moment buyers are waiting to see what develops.

Warehouse . . .

Warehouse Prices, Page 133

Chicago — While stocks at larger warehouses are still not full or balanced in all products, order volume has slackened further. The slump is considerably more pronounced for those distributors who do not handle a full line and for those specializing in secondary material. There is, however, little disposition to cut prices to attract new business, inflexible costs acting to prevent this, although freight absorption is being practiced by some distributors. Cold-rolled sheets, particularly in coils, and galvanized products are outstandingly scarce, followed in order of scarcity by pipe, plates, and certain structural shapes. Easily obtainable from nearly all interests are hot-rolled sheets in most gages and carbon and alloy bars.

New York — Demand for steel from warehouse has leveled off with small orders predominating. Distributors are getting inventories into balance and ordering largely for replacement only. Volume of warehouse orders on mill books for third quarter is below normal and improved deliveries are a factor in spot buying. Prices on galvanized products, plates and hot-rolled alloy bars have been revised downward.

Pittsburgh — Increased competition is noted among steel warehouses with an increasing number of interests forced to absorb freight. Most distributors have ample stocks of various steel products, with the exception of galvanized sheets and, to a lesser extent, wide flange beams and standard pipe. As in the case of mill consumers, independent warehouse interests are following a cautious buying policy. Uniform prices for individual steel products are in effect among various distributors for the first time in months. Another indication of the return to prewar competitive market conditions is the emphasis placed on the ability of warehouses to make prompt delivery.

Cleveland — Warehouses are expecting their business to ease off somewhat further during the next few weeks while metalworking plants close for mass vacations. Meanwhile, improved deliveries of steel from mills are helping warehouses complete their filling of stocks. Among the last products to become adequately stocked are heavy plates and light bar flats. However, on most items, warehouses have been giving immediate delivery.

Prices remain unchanged.

San Francisco — Sales continue depressed and spotty, jobbers report. Volume is running around 40 per cent under a year ago. Unless prices are reduced, wholesalers foresee little pick-up in demand, and

*"Speaking of truck shovels . . .
Why did you buy a MICHIGAN?"*



On the road, for example, it's as easy to drive as any ordinary truck. On the job, its control makes a hit with operators. MICHIGAN'S air ram clutches are fast and smooth . . . they take the work out of operating. My operators like those finger-tip air controls—and I know that they've paid off in faster, more efficient operation . . .

And then there's MICHIGAN'S remote control. When you pull onto the job, you're ready to go! There are no draglinks to disconnect, no adjustments to make. You can drive and steer from the turntable cab with the cab in any position. The turntable engine supplies the power.

Take all these easy-handling advantages together and you can see why I advise you to get a MICHIGAN!"

Write for Bulletin 100—
"On the Job with MICHIGAN"

MICHIGAN

MICHIGAN POWER SHOVEL COMPANY
392 Second Street, Benton Harbor, Michigan, U.S.A.

DID YOU KNOW

you can buy
a brand new

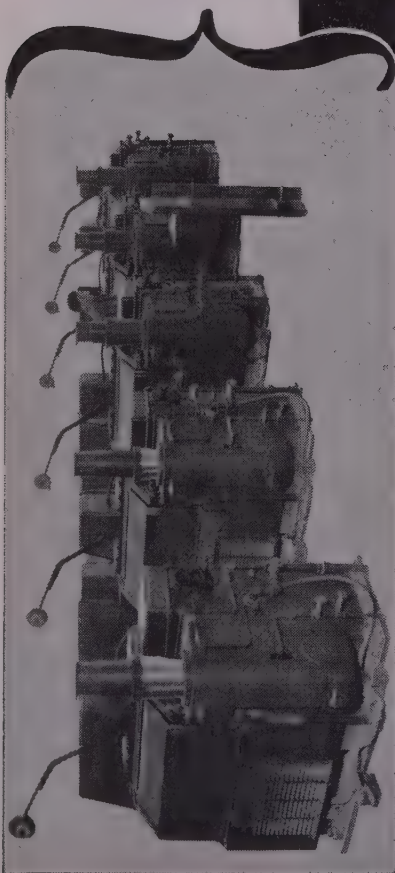
**MICHIGAN
TRUCK CRANE**

complete with chassis
for as little as \$10,250
F.O.B. factory?

Large or Small MULTIPLE CASTINGS for Your Machine Assemblies

Look no further for a dependable source for production castings, tailored to your specifications, for machine assemblies of all types . . . any size from 50 lbs. to 250,000 lbs., any degree of heat treating or machining. Three large and complete foundries and machine shops to serve you! Send us your prints for quotation.

Continental FOUNDRY & MACHINE CO.
CHICAGO · PITTSBURGH
Plants at: East Chicago, Ind.; Wheeling, W. Va.; Pittsburgh, Pa.



they, in turn, are buying little for future delivery.

Seattle—Jobbing houses report turn-over slightly down but the situation is not alarming. The price structure continues unchanged. Plates are much easier, as is reinforcing. Galvanized and black sheets are not yet in normal supply, although within sixty days it is expected this bottleneck will be cleared and complete stocks will be built. Premium items and gray market offers have disappeared.

Steel Shipments Gain Shown

New York—Shipments of more than 28,456,000 net tons of steel products in the first five months of 1949 were 1,676,000 tons, or 6.3 per cent, greater than in the like period of 1948, according to the American Iron & Steel Institute.

The increase was due mainly to large shipments of sheets and pipe. Gains also were made in shipments of structural shapes, plates, standard rails and reinforcing bars.

Shipments of 5,234,862 tons in May were the smallest of any month so far in 1949, about 450,000 tons less than the 5-month average. Better sustained than any other products in May were structural shapes, plates, rails, reinforcing bars, line pipe, standard pipe, oil country pipe, electrolytic tin plate, cold-rolled sheets and galvanized sheets.

Pig Iron . . .

Pig Iron Prices, Page 132

Boston—Considerable number of foundries accumulated top heavy inventories of finished castings before recognizing the reversal in the industrial trend and these stocks now plague some foundries more than their pig iron inventories. Generally, iron stocks are not too heavy, but with melt low, inventories are going down more slowly than expected. Relatively largest tonnages including foreign iron, are held by heaviest consumers. Mystic Iron Works has piled iron at Everett, Mass., for some weeks and is reported to have about 30,000 tons.

New York—Pig iron shipments this month will plumb the bottom, probably lowest in years. Resumption of buying is likely to be on a hand-to-mouth basis and not much increase in demand is expected before early fall. Because of low melting operations, inventories are being worked down slowly, although most high priced foreign iron will have been used by late August. Stocks at merchant furnaces are increasing with more stacks going down. Less tonnage is held in reserve than was normally the rule in prewar periods.

Philadelphia—Demand is at standstill with indications that shipments this month will be lowest in years. Many consuming plants are down for vacations which in some instances will be extended. Inventories are being lowered at a slower rate than expected and while August is expected to show some improvement, business with foundries will have to snap back at a greater rate than now indicated before much improvement in iron buying may be expected.

Buffalo—With a large number of area foundries taking vacation pe-

**Better cooling
Better lubrication
Better finishes
Longer tool life**

with
**Oakite
Soluble Oil**

Hundreds of metal-working plants rely on Oakite Soluble Oil for a wide range of machining and grinding operations. Here are a few reasons why:

1. Better cooling and lubricating action
2. Cleaner cutting, better finish
3. Longer tool life with fewer regrinds and settings
4. Less loading and glazing of wheels
5. Effective retarding of rust
6. Thorough rinsing away of chips
7. Stable emulsions, longer solution life
8. High dilution ratio, greater economy
9. Greater resistance to rancidity, less skin infection

FREE Write to Oakite Products, Inc., 34E Thames St., New York 6, N. Y., for illustrated booklet 5239R, giving tested formulas for drilling, reaming, milling, threading, etc. on steel. Other good formulas for brass, bronze, copper, aluminum.

OAKITE



SPECIALIZED INDUSTRIAL CLEANING
MATERIALS • METHODS • SERVICE

Technical Service Representatives Located in
Principal Cities of United States and Canada

riods, the local pig iron market remained in the doldrums last week. Demand continued to fall short of supply. Producers generally are expecting sales to remain light until after Labor Day. In view of the outlook, one producer reports work on an idle blast furnace will be spread over a more normal period because there is no need to rush the furnace back into action.

Pittsburgh — Most foundries are closed for a two-weeks' vacation period which will extend through mid-July. Merchant iron sellers report receipt of orders from customers who have not been in the market since early spring. The volume of these orders has not been large enough to indicate a reversal of the current downturn in demand, although it is contended by some sellers to be a forerunner of the expected resumption in ordering for inventory replacement this fall. Pig iron output was reduced further last week with the blowing out of No. 5 furnace at Carnegie-Illinois Steel Corp.'s Edgar Thompson Works at Braddock, Pa., leaving only 34 out of 47 units active in the Pittsburgh district.

Cincinnati — Pig iron shipments into this district are the lowest in years. With many foundries closed down for vacations, it is impossible to adjudge what a normal production level, or requirements in pig iron, should be at this time. Furnace representatives find no signs of a marked pickup in pig iron ordering until Sept. 1 at least.

Cleveland — Two blast furnaces in which Republic Steel Corp. had been producing merchant pig iron are still out of production because of lack of demand but the company is using part of the capacity of another of its furnaces here to fill current orders. July is expected to be a slow month, but there is hope that after summer vacations in industry are out of the way a pickup will occur in demand for iron.

St. Louis — Pig iron demand is in the doldrums, although a few foundries whose inventories have reached rock bottom are reported drifting back into the market. On the whole, the inactivity so far this month is worse than had been anticipated. Foundries report that while their order situation, although bad, is not deteriorating further, they now find that vacations added to previous curtailments make what normally would be a 30-day stock of iron adequate for perhaps 90 days. This is especially true of jobbing foundries. Therefore Kopper's production holds at 45 per cent of capacity, which enables it to meet demand and still build ground stocks a little.

Newark, O., Mill Ships Cable

Newark, O. — First shipments of aluminum electrical conductor cable were made last week by the Permanente Metals Corp. Oakland, Calif. from its new aluminum rod, bar and cable mill here. Deliveries are starting more than three months ahead of the schedule set by Permanente when it began last year to install equipment for the production of wire and cable in the Newark plant which has an annual capacity of more than 100 million pounds of electrical conductor

material. The shipments signal Permanente's entry into this field as one of only two fully integrated sources of aluminum cable in the country. The big mill involves an investment by Permanente of \$9 million, half for its purchase and half for equipment.

Initial deliveries went to the Bowie-Cass Electric Cooperative Inc., Douglassville, Tex., and California-Pacific Utilities Co., San Francisco.

Iron Ore . . .

Iron Ore Prices, Page 132

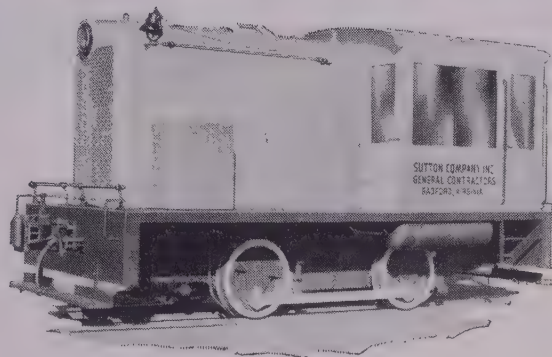
Cleveland — Shipments of Lake Superior iron ore during the week ended July 4 totaled 2,861,457 tons com-

pared with 3,019,841 tons for the preceding week and 2,736,470 tons for the like week a year ago, according to the Lake Superior Iron Ore Association, this city. This brought the cumulative total for the season to 34,608,430 tons compared with 32,172,385 tons for the like period a year ago. Shipments from United States ports alone totaled 2,790,095 tons during the week ended July 4, or at an average daily loading rate of 398,585 tons, compared with 2,952,901 tons and a loading rate of 421,843 tons for the previous week. This brought the United States cumulative total to 34,152,140 tons, an increase of 2,368,327 tons over the total for the 1948 period.

Shipments of Lake Superior iron

If Your Operation

Calls for RAILS



DAVENPORT
Better-Built
LOCOMOTIVES
are

AVAILABLE
in
STEAM
GASOLINE
DIESEL
with
ELECTRIC
or
MECHANICAL
DRIVE

COMPLETE
INFORMATION
ON REQUEST

Wisdom calls for DAVENPORTS

A Davenport Better-Built Locomotive will give you flexible, always available, haulage power for record work accomplishment at lowest ton-mile costs. Whatever the size and type you require, a Davenport will put Profit-Power on your rails.

WE ANALYZE YOUR NEEDS

It will be a pleasure to send you our latest Haulage Survey Data Sheet to enable you to describe your haulage conditions accurately and completely. Our engineers will analyze the data you submit and recommend the power unit that will perform most profitably for you.

EXPORT OFFICE

BROWN & SITES CO., INC.

50 Church St.

New York 7

Cable Address "BROSITES"

DAVENPORT LOCOMOTIVE WORKS

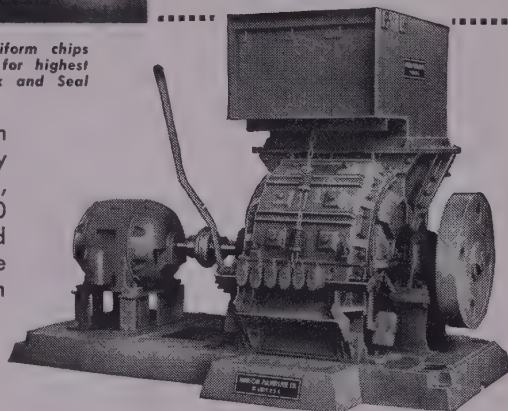
A DIVISION OF DAVENPORT BESLER CORPORATION, DAVENPORT, IOWA



Segregated turnings are reduced to uniform chips by an American Shredder Ring Crusher for highest cutting oil recovery at the Crown Cork and Seal Co., Baltimore.

The cutting oil reclamation from chips produced from long, curly turnings of steel, alloys, brass, aluminum, etc., increases to 30 to 50 gallons per ton. This yield plus the savings in storage space and handling along with higher scrap value of short shovel chips pays for an American Turnings Crusher.

CUTTING-OIL RECOVERY can buy an AMERICAN TURNINGS CRUSHER



Write for informational bulletin
reducing your turnings with an American.

American PULVERIZER COMPANY
Originators and Manufacturers of
Ring Crushers and Pulverizers

1539 MACKLIND AVE.
ST. LOUIS 10, MO.

"HERCULES"

(RED-STRAND)
the **DEPENDABLE**
WIRE ROPE
for *any* **TOUGH JOB**

Its toughness... its easy spooling... its unusual endurance—make for longer life, faster work and lower operating cost.

We Invite
Your Inquiries

P R E F O R M E D

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

ESTABLISHED 1857

5909 KENNERLY AVENUE • ST. LOUIS 12, MISSOURI

NEW YORK 6
LOS ANGELES 21
CHICAGO 7
SAN FRANCISCO 7
HOUSTON 3
PORTLAND 9
DENVER 2
SEATTLE 4

ore in June totaled 12,162,323 tons, an increase of 434,956 tons, or 3.71 per cent, from a year ago.

Details of the movement of ore are summarized as follows:

—Week Ended July 4—

Port	1949	1948
Escanaba	118,942	176,688
Marquette	168,347	95,840
Ashland	180,045	211,839
Superior	1,111,075	1,070,223
Duluth	651,468	581,315
Two Harbors	560,218	566,771
U. S. Ports	2,790,095	2,712,676
Michipicoten	25,373	11,648
Port Arthur	45,989	12,146
Canadian Ports	71,362	23,794
Total All Ports....	2,861,457	2,736,470

—Season to July 4—

Port	1949	1948
Escanaba	1,792,418	1,921,613
Marquette	1,879,322	1,612,938
Ashland	2,272,251	2,256,304
Superior	13,180,883	11,898,665
Duluth	7,625,626	7,003,774
Two Harbors	7,401,640	7,090,519
U. S. Ports	34,152,140	31,783,813
Michipicoten	217,023	195,676
Port Arthur	239,267	192,896
Canadian Ports	456,290	388,572
Total All Ports	34,608,430	32,172,385

Scrap . . .

Dealings in cast iron items devoid of action despite threat of strike

Scrap Prices, Page 136

Pittsburgh—Dealings in scrap continue devoid of action with major producers out of market for dealer scrap. These items are quoted nominally at previously established differentials below No. 1 industrial heavy melting scrap. Recent railroad list awards have confirmed normal \$1 spread between industrial and railroad heavy melting grade, a decline of \$2 from previous level. Further decline in quotations also is reported throughout entire railroad scrap list. Short shovel turnings are off about \$1 based on willingness to sell within range of \$16.50 to \$17. Dealing in cast scrap items continues dormant despite threat of shut-off of pig iron supply due to possible strike within steel industry. Normal price differential between low phos and No. 1 heavy melting has not prevailed for some weeks now, bulk of former item being combined with heavy melting in shipments on old orders.

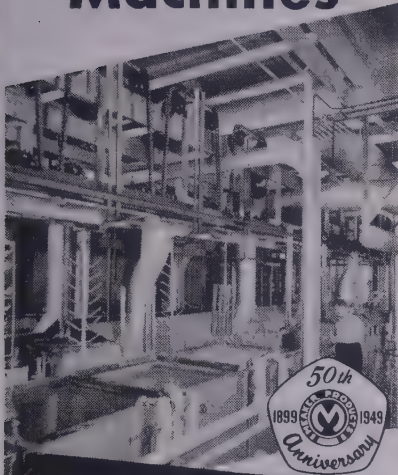
Boston—Prices drift in absence of buying while incoming scrap, both steelmaking and cast, is at a low point at yards. Largest consumer of steel scrap in this area is down for three weeks. Foundries show slight interest in cast, although current prices are attractive in view of cost of scrap now being melted; current prices of some cast grades are about one-third peak levels.

New York—There are no outstanding orders for No. 1 heavy melting steel, and price for that grade is nominal at \$11 to \$11.50. Downward trend in price continues on other open-hearth grades, declines ranging from \$1 to \$2 per ton. Although buying is light, there are signs of some revival of interest in cast scrap, although prices do not reflect such trend with prices off an average of \$1 per ton for those grades.

Philadelphia — With scrap buying

MEAKER

Electroplating Machines



AUTOMATIC MACHINES
STRAIGHT-A-WAY and RETURN TYPE
for mass production of
large or small pieces

SEMI-AUTOMATIC MACHINES
For supplementary capacity
or medium output departments

SPECIAL MACHINES
For any special plating
or cleaning sequence

Equipment tailored to fit your requirements, making every operation in the plating sequence automatic, or as mechanized as possible, is the profitable way to handle electroplating on a production basis. This Meaker method applies equally well to departments with only moderate daily output and to the largest and heaviest plating needs of the mass production plants. It offers not only a lower unit cost, but the production is increased, and a better and more uniform quality is assured.

Write for the full information. Ask for Booklet 148



THE MEAKER COMPANY

1631 South 55th Ave., Chicago 50, Ill.
Telephone CRawford 7-7202

stagnant, prices drift nominally unchanged with no early recovery indicated. At current prices intake by yards is on decline while producers of industrial scrap show slight interest in seeking markets. Production of industrial scrap is also down substantially. Cast grades are as dull as steelmaking scrap, foundries either being down or operating at sharply reduced schedules.

Buffalo—Small sales were reported in steelmaking grades of scrap to further substantiate prevailing ranges. Tonnage was restricted and a weak undertone continued to dominate the market. Dealers denied reports that the price differential between No. 2 heavy melting and No. 2 bundles had been extended an additional 50 cents to \$2.50. Sales of both items were reported within quoted range of \$17.-17.50, and \$15.-15.50, respectively. However, one leading mill consumer reports purchases of No. 2 material at \$17.50 while No. 2 bundles were acquired at \$15. The tonnage was light. Low phos dropped an additional 50 cents a ton as sales were reported both at the inside and outside figure of the \$19.50-20.50 range. While an active transshipment period of scrap from the eastern seaboard into Canada continues here, the movement of eastern material to local mills was also resumed during the week. The Bethlehem Lackawanna plant received 3343 tons via the Barge Canal.

Detroit—In the face of complete suspension of buying by mills, scrap is being laid down on docks and elsewhere. It is in no sense distress material and there are hints prices may get firm once mills resume scrap intake. Much may depend upon whether a steel strike develops, but there is some feeling in this area that no labor interruptions will occur in steel. In any event, however, July and August are expected to be weak months, and sights are now being drawn on September.

Cincinnati—The holiday last week merely served to emphasize dullness in the scrap market. Open-hearth material is off \$1 on basis of current, light deliveries. Demand for cast grades has virtually vanished, so that prices are continued unchanged, but nominal and weak. Several railroads have withdrawn recent scrap lists. One bright gleam appeared in the market, a report of stiffening in cast grades in the South.

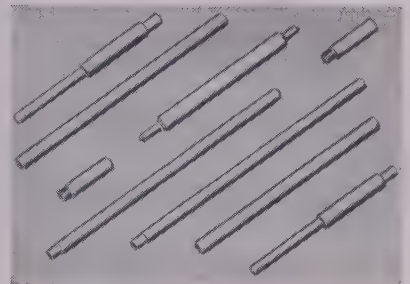
Cleveland—Extreme dullness continues in the scrap market, the only activity being the filling of a few old orders. New orders are not forthcoming. Because of reduced operations and mass vacations at many metalworking plants the flow of industrial scrap from them has fallen off drastically. Traders expect August to be dull also, but are hopeful of a revival of activity in September.

Chicago—Concern over possibility of a steel strike dominates the scrap market, consensus being that mills generally are acting as though they believe a strike will occur. Feeling locally is that if a strike is called some facilities will probably not reopen regardless of the eventual settlement terms, unless a pickup in steel demand is experienced in the meantime. One mill which had been expected to place orders for dealer scrap has not yet done so, and other

PAY LESS

for
precision
metal parts
made by

TORRINGTON

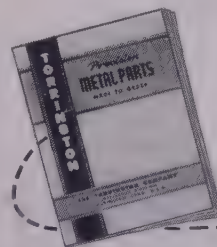


Low cost for precision quality, fine finish, uniform heat treatment is assured by our high productive capacity and special equipment.

Typical of a wide variety of parts are special rollers, shafts, studs, dowel pins made to order. Chamfer, radius, taper, hemispherical and other styles of ends. Rollers from .014" to .500" diameter. Centerless ground .040" to .500"; diameter tolerance $\pm .0001$ ". Finish as fine as 3 micro-inches. Dowel pins from .0625" to .3125".

Send your prints and specifications today for prompt quotation and ask for a copy of "Precision Metal Parts."

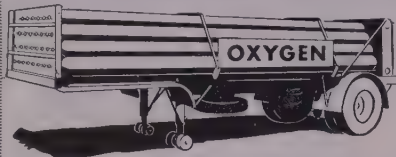
THE TORRINGTON COMPANY
Specialty Department
556 Field Street • Torrington, Conn.



Send coupon today for your free copy of this booklet.

Name _____
Firm _____
Address _____
_____ 6

WHO PAYS THE FREIGHT?



when you buy

BY THE CUBIC FOOT

OXYGEN

BY THE TON

The handling of oxygen is a large part of the cost to most oxygen users—and you can **ELIMINATE HANDLING COSTS FOR OXYGEN.**

With Air Products generators, you take oxygen from the air and push it right through your pipe lines. You assure your supply at low cost, because with these generators there is

**NO FREIGHT COST
NO HANDLING
NO EVAPORATION LOSS
NO RESIDUAL LOSS
NO DELIVERY FAILURE**

If you use over 200,000 cubic feet of oxygen per month, it will pay you to get full information about Air Products generators and our lease plan. Write today, at no obligation.

AIR PRODUCTS, INC.

P. O. Box 538
Allentown, Pa.

Assure Your Supply at low cost with

Air Products
OXYGEN GENERATORS

mills' orders are being cleaned up rapidly. Acting as an offset to the dearth of activity between brokers and dealers are the numerous plant and yard vacations now in progress or imminent. Except for the closing of two railroad lists, last week was otherwise featureless.

St. Louis—Scrap market remains listless with mills holding off until the steel strike question is settled. Foundry demand also is negligible, since vacation shutdowns are adding to their already low operations rate. Mill and foundry inventories are equivalent to about 60 days' needs. Prices are largely unchanged except for weakness in railroad grades. Rail offerings of late have been heavy as replacement steel is received, and prices would be considerably lower were it not for slim dealer stocks and country shipments. The latter have virtually dried up.

Los Angeles—Movement of scrap is virtually at a standstill, with the yards of most dealers strike-bound. Mill operations have not been affected, however, for stockpiles and off-shore receipts are adequate to meet current needs. Foundry activity continues in the doldrums, and demand is very light for cupola cast.

San Francisco—Decline in scrap prices and current curtailments in steel production are halting the movement of scrap from Pacific battle areas to the West Coast. A 6500-ton cargo of scrap, landed on the West Coast about three weeks ago, is believed to be the last of the heavy shipments which have been made so far this year. An improvement in prices and general economic conditions, however, is expected to bring resumption of the movement. Vast quantities of scrap still remain in the Pacific area. More than 5 million tons are estimated to be in Japan alone. Meantime, movement of domestic scrap is negligible. Mills are well supplied and show no inclination to buy other than replacement needs.

Seattle—Rolling mills report receipts of steel scrap sufficient for current requirements. Inventories are static as no effort is being made to increase stocks unduly in view of present conditions which seem to indicate reduced operations. Bethlehem Pacific Coast Steel Corp. received 4900 tons of prepared scrap from the Philippines last week. Prices are unchanged at \$17 for No. 1 and No. 2.

Cast iron scrap is plentiful, foundries reporting maximum price of \$23, one plant having paid \$20 this week for a shipment of No. 1. Foundry operations are slow and do not exceed 50 per cent of capacity in this area. Pig iron is in good supply, price unchanged at \$46.50 for No. 2, Geneva.

Foundry Revises Price Schedule

Hamilton, O.—Hamilton Foundry & Machine Co., 1551 Lincoln Ave., this city, withdrew all current castings prices after shipments of June 30. New casting prices are effective for shipments beginning July 1 through Sept. 30, 1949. Each active job is being reviewed and refigured. Although many users of castings are closing for vacation periods during July and August, Hamilton Foundry

SMALL STAMPINGS

**Any Metal
Any Quantity**

30 years' experience
gives us the
"know how"

Hundreds of satisfied
customers are evidence
of our high quality

THE
MASTER PRODUCTS
COMPANY

6400 PARK AVE. • CLEVELAND 5, OHIO

is planning to continue regular operations through this period.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 132

Pittsburgh—Dearth of new orders, plus growing supply on the open market of oven foundry coke has prompted Connellsville beehive operators to keep furnaces banked, despite the unexpected resumption of coal mining operations. Some coke producers are convinced that bulk of beehive ovens will remain banked throughout the present period of depressed demand. Prices for Connellsville beehive and foundry coke are •nominally unchanged.

Rosslyn Metal Prices Revised

Carnegie, Pa.—A new and wider price list, which now includes new high-temperature grades of Rosslyn metal, has been issued by American Cladmetals Co., this city. Reductions which reflect improved manufacturing practices with resulting lower costs have been made in base prices of some grades of Rosslyn metal which have copper sandwiched between layers of stainless steel. The spinning grade has been reduced from 84.00c to 79.00c per pound. Prices range from 73.00c to \$1.15 per pound. The extras, applying to certain sizes, have been revised downward for all grades.

Structural Specifications Revised

CONCENTRATION of the general requirements for delivery of rolled structural steel in a single specification, A6, has been announced by the American Society for Testing Materials, Philadelphia. Tolerance tables, testing details, etc. for plates, shapes and bars have been removed from other specifications such as A7, which covers steel for bridges and buildings, and A 113, which lists standards for locomotives and cars, and incorporated in the single new pamphlet.

In addition, product specifications for the various structural categories have been revised and condensed and included in the booklet.

Baldwin Awarded Contracts

CONTRACT award for two hydraulic turbines has been given Baldwin Locomotive Works, Eddystone, Pa., by U. S. Army Engineers, Portland district. Turbines are for the Detroit Dam power house on the Santiam river in Oregon; cost will be about \$1,250,000. Baldwin has also received orders from the Erie Railroad for six 1500 hp diesel electric road switching locomotives, for five similar type locomotives from the Union Railroad Co. and for 17 locomotives from the Southern Pacific.

For Use In:

FOUNDRY

COKE DEPT.

STRIP MILL

STORES DEPT.

TOOL WORKS

OPEN HEARTH

SCRAP YARDS

MACHINE SHOP

ROLLING MILL

FORGING PLANT

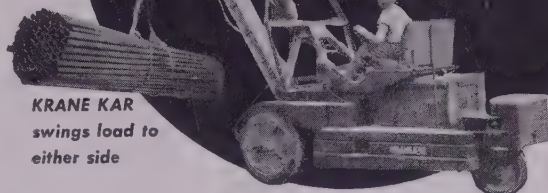
BLOOMING MILL

MAINTENANCE DEPT.

CONSTRUCTION DEPT.

COLD-DRAWN BAR MILL

COMPLETE MATERIALS-HANDLING SERVICE



KRANE KAR
swings load to
either side

KRANE KAR is a lively swing-boom mobile crane, gas or diesel operated, of compact dimensions, short turning radius. It transports any load it can lift. Put it to work in any part of your plant, yard, or stores; it will speed up production, cut down handling costs. Available for service 24 hours a day, every day.

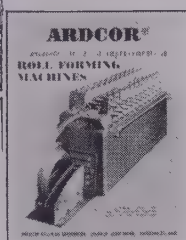
9 to 37 ft. booms or adjustable telescopic booms. Electric magnet, clam-shell bucket, and other accessories available. Write for Bulletin No. 79.

THE ORIGINAL SWING-BOOM MOBILE CRANE
WITH FRONT-WHEEL DRIVE AND REAR-WHEEL STEER
1½, 2½, 5, AND 10 TON CAPACITIES

KRANE KAR

Mrs. of Car Movers,
Winches, Truck Cranes, etc.

SILENT HOIST & CRANE CO., 849 63rd ST., BKLYN 20, N.Y.

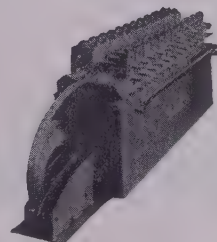


WRITE

For Your **COPY**

TODAY!

ARDCOR* ROLL FORMING MACHINES
* Formerly McKinney—
WITH ARDCOR IMPROVEMENTS
FORM, EMBOSS and CUT all
in One Continuous Operation!



USE ARDCOR ROLLER DIES!

Continuous precision and quality of cold rolled products depend upon your roller dies! With correctly designed ARDCOR Roller Dies (For All Roll Forming Machines), made of highest grade tool steel, maximum production speeds are assured . . . better products obtained.

Send Work Specifications For Estimates . . . No Obligation.

AMERICAN ROLLER DIE CORP.
20700 St. Clair Ave. ★ CLEVELAND 17, OHIO

Canada . . .

Toronto, Ont.—Canada has lifted export controls from a large number of iron, steel and wood products, according to announcement by the Department of Trade and Commerce. Following is the latest list from which export control has been lifted:

Machinery and parts for dairy and laundry or dry cleaning equipment; new, used or rebuilt machinery or machine tools.

Automobiles and automotive equipment as follows: Automobiles, excavating and power shovels, motor graders, motor trucks and busses, tractors and equipment.

Electrical appliances, such as ranges, rangettes, refrigerators, washing machines.

Manufactured products: Bottle closures, chains, enamelware, furniture for household or business use, hand tools, agricultural tools, holloware, flatware, utensils, containers, hydraulic pumps, springs for furniture or mattresses, tin plate containers, valves, welding rods and wire, wheelbarrows, wire cloth, wire manufactures.

Railroad rolling stock and equipment of all kinds, complete or unassembled.

Hoisting equipment as follows: Cranes, derricks, hoists, freight or passenger elevators.

Lead in the form of bullion, lead base bullion, antimonial lead, castings, pigs, bars, reclaimed lead, dross lead, or scrap, including antimonial lead scrap.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3000 tons, superstructure, bascule bridge, Manasquan river, between Brielle and Point Pleasant Beach, N. J., to American Bridge Co., Pittsburgh.

1500 tons, 230-kv transmission towers for Bonneville Power Administration, to Bethlehem Pacific Coast Steel Corp.; San Francisco, low \$362,178.

1500 tons, Buffalo State Hospital, Buffalo, medical and surgery building, to the Bethlehem Steel Co.; John W. Cowper Co., Buffalo, general contractor.

600 tons, building, University Hall, Columbia Presbyterian Medical Center, New York, to Grand Iron Works, New York.

400 tons, new school, Union Free District 3, Cleveland Hill, Cheektowaga, N. Y., to the Ernst Construction Co., Buffalo; John W. Cowper Co., Buffalo, general contractor.

390 tons, spinning building, Broad Brook, Conn., to Topper & Griggs, Hartford, Conn.

300 tons, Memorial hospital, Newton, N. J., to Albert E. Smith Iron Works, Newark, N. J.

250 tons, Buffalo State Hospital, Buffalo, boiler house, to the Buffalo Structural Steel Co., Tonawanda, N. Y.

220 tons, plant addition, International Paper Co., North Tonawanda, N. Y., to the Bethlehem Steel Co.; Balling Bros., Tonawanda, general contractor.

135 tons, hospital, New Milford, Conn., to Topper & Griggs, Hartford, Conn.

135 tons, milk depot, Waddington Milk Co., Queens, N. Y., to Simond Holland & Son, New York.

STRUCTURAL STEEL PENDING

300 tons, Nome, Alaska, seawall, Manson Construction & Engineering Co., Seattle, low to U. S. Engineer, \$1,546,380.

300 tons, Woolworth store building, Tacoma, Wash.; bids soon.

290 tons, Okanogan river bridge, Chief Joseph dam project, Washington; general contract by U. S. Engineer to Willett & Sons, Wenatchee, Wash., low \$293,314.

250 tons, I-beam bridge, Union and Penn townships, Pennsylvania; bids July 22, Harrisburg; project also takes 95 tons of plain steel bars.

200 tons, Consolidated Freightways terminal, Seattle, John H. Sellen Construction Co., Seattle, low \$308,553.

100 tons, repairs to three-span through truss bridge, Clarion river, Clarion and Paint townships, Pennsylvania; bids July 22, Harrisburg.

Unstated, miscellaneous items, units R-1, 2 and 3, Coulee power plant; bids to Bureau of Reclamation, Denver, July 21; sch. No. 2724.

Unstated, two stop log derricks, for McNary dam; bids to U. S. Engineer, Walla Walla, Wash., July 27.

Unstated, 1007-foot bridge, Missouri river, and 1085-foot overpass, Montana state highway projects; Anderson Construction Co., Great Falls, Mont., low \$1,174,128.

Unstated, Willamette river bridge, Eugene, Oregon state highway project; Tom Lillebo, Reedsport, Oreg., low \$447,885.

Unstated, state highway grade separation, Baker, Oreg.; Valley Construction Co., Portland, low \$434,547.

REINFORCING BARS . . .

REINFORCING BARS PLACED

750 tons, Buffalo State Hospital, Buffalo, to the Buffalo Steel Co., Tonawanda, N. Y.; John W. Cowper Co., Buffalo, general contractor.

350 tons, west canal, Columbia Basin project, to Steel Construction Co., Portland, Oreg.; Morrison-Knudsen Co., Seattle, general contract.

257 tons, bridge No. 5591, Minneapolis, through Walter D. Gierzen Co., Minneapolis, to U. S. Steel Supply Co.

125 tons, Cook county (Ill.) nurses home, through E. H. Marhoefer Jr. Co., to Ceco Steel Products Co., Cicero, Ill.

113 tons, Kagle's Mill reservoir, Mill Creek, Ind., through Midland Constructors Inc., Chicago, to U. S. Steel Supply Co.

100 tons, miscellaneous construction projects, to Bethlehem Pacific Coast Steel Corp., San Francisco.

REINFORCING BARS PENDING

736 tons, tuberculosis hospital, Chicago, for state; J. L. Simmons Co. Inc., Chicago, low on general contract.

594 tons, interns and residents building, Cook county (Ill.) hospital; Warner Construction Co., Chicago, low on general contract.

315 tons, reinforced concrete pavement, Union and Penn townships, Pennsylvania; bids July 22, Harrisburg.

250 tons, reinforced concrete pavement, Mead and Sheffield townships, Pennsylvania; bids July 22, Harrisburg; also 55 tons of plain structural steel.

204 tons, hospital, Waupun, Wis.; Hutter Construction Co., Fond du Lac, Wis., low on general contract.

Unstated, fish processing plant for Lyle Branchflower Co., Seattle; bids to Sigmund Ivansson, engineer, Seattle, July 15; \$160,000 project.

Unstated, \$100,000 explosives recovery plant, Umatilla, Oreg.; bids to U. S. Engineer, Seattle, July 14.

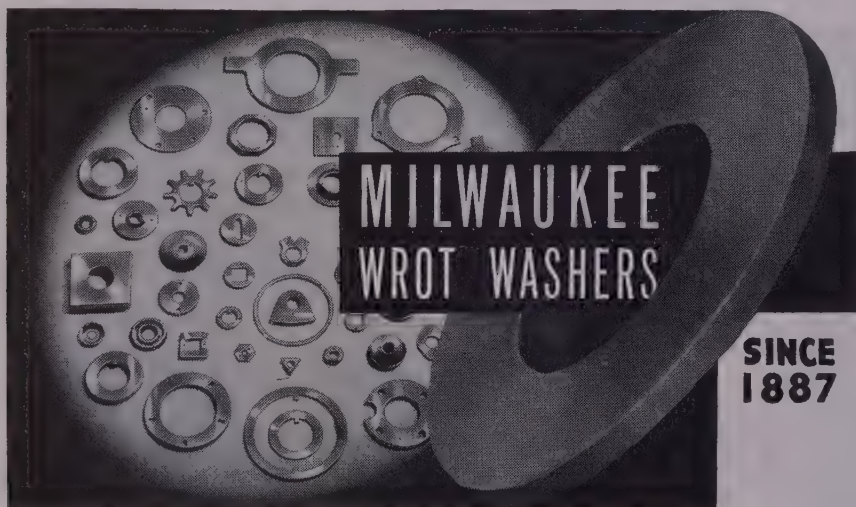
Unstated, state highway projects, Montana; Anderson Construction Co., Great Falls, Mont., low \$1,174,128; two jobs.

PLATES . . .

PLATES PENDING

1500 tons, Nome, Alaska, seawall (sheet steel piling); Manson Construction & Engineering Co., Seattle, low to U. S. Engineer, Seattle.

Unstated, 320 mile section, 8-inch diameter oil pipeline, Salt Lake City, Utah, to Boise, Idaho; bids soon to Salt Lake Pipeline Co., subsidiary of Standard Oil Co. of California.



The SYMBOL of QUALITY for 62 YEARS

WASHERS . . . Standard and Special, Every Type, Material, Purpose, Finish . . . STAMPINGS of every Description . . . Blanking, Forming, Drawing, Extruding.

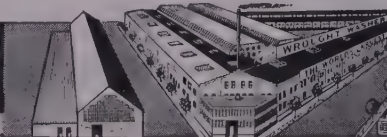
Your most dependable source of supply — the world's largest manufacturer of Washers, serving Industry since 1887. Over 22,000 sets of Dies.

Submit your blueprints and quantity requirements for estimates.

WROUGHT WASHER MANUFACTURING CO.

The World's Largest Producer of Washers

2103 S. BAY ST., MILWAUKEE 7, WIS.



PAGE

Stainless Steel

WIRE

ROUND

FLAT

OR

SHAPED

PAGE has been drawing stainless steel wire since the earliest development of stainless—for many manufacturers has become "Wire Headquarters."

Think of PAGE as a responsible source for wire—stainless steel, high or low carbon steel. Whatever your problem involving wire...

Get in touch with Page!

Monessen, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Pittsburgh, Philadelphia, Portland, San Francisco, Bridgeport, Conn.



PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

CONSTRUCTION AND ENTERPRISE

CALIFORNIA

EAST LOS ANGELES, CALIF.—Crown Zellerbach Corp., 910 E. 61st St., Los Angeles, has awarded a \$1.5 million contract to H. C. Smith Co., 718 E. 16th St., Los Angeles, for construction of a plant and office; Austin Co., 777 E. Washington Blvd., Los Angeles, architect.

CONNECTICUT

GLASTONBURY, CONN.—Consolidated Tobacco Corp., 651 Windsor St., Hartford, Conn., has awarded a \$400,000 contract to Bartlett Brainerd Co., 103 Woodbine St., Hartford, for construction of a warehouse on Oak St.

ILLINOIS

BELLWOOD, ILL.—Duer Tube Bending Co., 2810 Madison St., is constructing \$75,000 plant additions on separate contracts basis; Cedric Shantz, 25 E. Jackson St., Chicago, architect.

GENEVA, ILL.—Burgess & Norton Mfg. Co. has awarded a \$70,000 contract to A. Wilson & Son, 418 Ford St., for construction of a factory.

MASSACHUSETTS

SOMERSET, MASS.—Montaup Electric Co., Box 391, has awarded a \$13 million to \$14 million contract to Stone & Webster Engineering Corp., 49 Federal St., Boston, for construction of a power plant, 15 miles of rural distribution lines, etc.

MISSOURI

ST. LOUIS—F. Burkart Mfg. Co., 5000 N. Second St., has awarded an \$80,000 contract to Willingham Construction Co., 5701 Vernon Ave., for construction of a factory, 300 block E. Gano St.; Metz & Eason, 3800 W. Pine Blvd., engineer.

ST. LOUIS—General Electric Co., H. S. Sherman, manager, Pierce Bldg., has awarded a \$400,000 general contract, plus warehouse and service building at 1115 East Rd. to John Hill Construction Co., Syndicate Trust Bldg., 915 Olive St.

ST. LOUIS—Anheuser-Busch Inc., 721 Pestalozzi St., has awarded a contract to Fruin-Colnon Contracting Co., 1706 Olive St., for construction of an addition to the company's starch plant at 1021 Pestalozzi St.; A. J. Berkel, architect, and William C. E. Becker, structural engineer, Ambassador Bldg., 411 N. Seventh St.; approximate cost is \$100,000.

OHIO

ASHTABULA, O.—Timken-Detroit Axle Co., c/o Bossart Division, New Castle, Pa., has asked bids on two 1-story factory additions in Saybrook township at 20 W. Sanborn St., \$150,000.

BARBERTON, O.—A million dollar fire damaged the American Vitrified Products Co. June 29. The plant makes sewer pipe.

CANTON, O.—Fire destroyed the plant of Canton Metal Alloys Co., 1551 Belden Ave., S. E., on June 23. Philip Triger, 1613 Harvard Ave., who operates the firm reports approximate loss as \$50,000. The company plans to rebuild immediately.

EUCLID, O.—Lincoln Electric Co., 22818 Coit Rd., Cleveland, has awarded an \$8.5 million contract to Austin Co., 16112 Euclid Ave., Cleveland, for construction of a storage and administration building.

YOUNGSTOWN—Republic Steel Corp., Republic Bldg., Cleveland, has awarded \$8-\$10 million contract to Koppers Co. Inc., Koppers Bldg., Pittsburgh, for construction of new battery by-product coke ovens and materials handling facilities.

PENNSYLVANIA

WEST PITTSBURGH, PA.—It was planned to break ground June 30 for the new unit at New Castle power plant, according to Pennsylvania Power Co. officials. Improvement

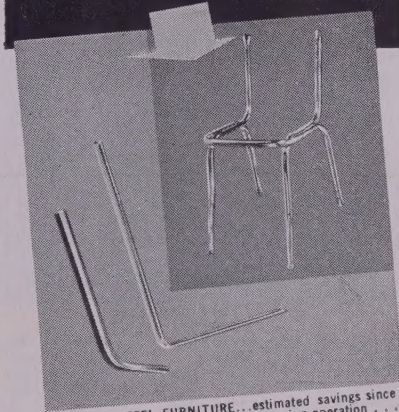
Save...

up to 50%
of present
cleaning costs!

DIVERSEY*

No. 909

Unique Heavy Duty Soak Tank Cleaner
CAN ELIMINATE SOLVENT PRESOAK AND
HAND-WIPE OPERATIONS!



TUBULAR STEEL FURNITURE...estimated savings since Diversey No. 909 was applied to cleaning operation... \$15,000.00 per year!
STAINLESS STEEL MOULDINGS...cost of cleaning material reduced 67%...represents savings of from \$8,000.00 to \$10,000.00 per year!

THE DIVERSEY CORPORATION
Metal Industries Department
53 W. JACKSON BLVD., CHICAGO 4, ILL.



NEW BULLETIN AVAILABLE... MAIL THE COUPON FOR YOUR COPY!

*TRADE MARK REG.

THE DIVERSEY CORPORATION

Metal Industries Department
53 W. Jackson Blvd., Chicago 4, Ill.

Gentlemen:

Please send me complete information on Diversey No. 909, including New Bulletin.

Name _____ Title _____

Company _____

Address _____

City _____ State _____

DM7

is expected to cost \$11.5 million and the project will be finished late in 1951.

RHODE ISLAND

PROVIDENCE, R. I.—Page Realty Co. Inc., 119 Friendship St., has awarded a \$100,000 contract to Hope Bldg. Co., 36 Exchange St., for construction of a factory; DiMitri & DiMitri, 17 Exchange St., architect.

TENNESSEE

JACKSON, TENN.—Aluminum Foils Inc., c/o contractor, has awarded a \$1 million contract to Foster & Creighton Co., American National Bank Bldg., Nashville, Tenn., for construction of a manufacturing plant.

MEMPHIS, TENN.—International Harvester Co., James R. Allen, manager, industrial engineering and construction department, will let contract to William Culbreath Construction Co., Porter Bldg., for \$1 million wholesale parts depot; Johnson-Lenz, 293 Jefferson Ave., for heating, ventilating and air conditioning; Texas Automatic Sprinkler Co., 325 W. Trigg Ave., for sprinkler system; Gas Structural Steel Co., Chicago, for structural steel; Walk C. Jones Jr., 1215 Poplar Ave., architect.

TEXAS

DALLAS—Lone Star Gas Co., Jackson & Harwood Sts., has awarded a contract for \$244,468 to O'Rourke Construction Co., P.O. Box 7447, for construction of a warehouse, office and garage, Mockingbird Lane; Grayson Gill, 1913 San Jacinto, Dallas, architect.

HOUSTON—J. C. Ed and Harvey Suttles, 3978 Del Monte St., has awarded a \$135,000 contract to Metallic Bldg. Co., 224 Rains St., for construction of a metal products manufacturing plant; plant foundation and basement and railway spur tracks, \$72,000, awarded to Tellepsen Construction Co., 1710 Telephone Rd.

KYLE, TEX.—J. D. & Ernest Cummings, San Marcos and Sugarland, Tex., has awarded a \$150,000 contract for alfalfa dehydrating unit and warehouse; owner builds.

McALLEN, TEX.—Mayfair Minerals Inc. and Coastal Refineries Inc., c/o V. E. Cook,

has awarded a \$1 million contract to Gasoline Plants Construction Co., Neils Esperson Bldg., Houston, for construction of a plant.

SAN MARCOS, TEX.—J. D. & Ernest Cummings, San Marcos and Sugarland, Tex., will build a \$145,000 alfalfa dehydrating unit and warehouse; owner builds.

WASHINGTON

SEATTLE—U. S. Engineer has called bids for July 14 on construction of a \$100,000 explosives recovery plant at Umatilla, Oreg. Storage buildings and steel and concrete armored barricades are involved.

SEATTLE—Bids will be received July 15 by Sigmund Ivarsson, consulting engineer, for proposed fish processing plant, Lyle Branch-flower Co., 15th N.W. and Shilshole Ave., replacing one destroyed by fire a year ago; plans call for reinforced concrete main plant, with modern equipment.

WISCONSIN

MEDFORD, WIS.—Hurd Millwork Co. will build a \$150,000 factory, day labor; C. E. Mohrs & Associates, 2550 University Ave., Madison, Wis., engineer.

CANADA

CALGARY, ALTA.—Gypsum Lime & Alabastine Canada Ltd., 30th Ave. & 17th St. E., will build a \$300,000 rock wool insulated plant.

EDMONTON, ALTA.—Canadian Oils Ltd., Terminal Warehouse Bldg., Toronto, Ont., will build a \$100,000 warehouse, 105th Ave.

EDMONTON, ALTA.—Burns & Co. Ltd., 120th Ave. and 72nd St., has awarded a \$500,000 contract to Bird Construction Co. Ltd., 708 Confederation Life Bldg., Winnipeg, Man., for construction of a plant.

VANCOUVER, B. C.—Vancouver British Columbia Electric Co. announces the following awards on the third unit of 47,000 hp plant at Ruskin: General contract, Northern Construction Co. and J. W. Stewart Ltd., Vancouver, \$750,000; fabricating and installing turbines, Dominion Engineering Co., Montreal, \$440,000; generators, Cana-

dian Westinghouse, \$640,000; two transformers, Canadian General Electric Co., \$70,000.

WINNIPEG, MAN.—Gypsum Lime & Alabastine Canada Ltd., Sargent & St. James Sts., will build a \$500,000 factory.

ALLISTON, ONT.—Co-operative of Ontario, 28 Duke St. and Department of Agriculture, Queens Park, Toronto, will build a \$500,000 storage and shipping plant.

CORNWALL, ONT.—Canada Dry Ginger Ale Ltd., 153 Sherbourne St., Toronto, Ont., will build a \$125,000 plant.

ISLINGTON, ONT.—Coleman Lamp & Stove Co. Ltd., Toronto, Ont., will build a \$100,000 factory.

LONDON, ONT.—M. M. Dillon & Co., engineer, Bank of Toronto Chambers, has asked bids for Gair Co. Canada Ltd., 745 York St., R. L. Stephenson, manager, for a proposed \$400,000 factory.

SHELBOURNE, ONT.—Co-operative of Ontario, 28 Duke St. and Department of Agriculture, Queens Park, Toronto, Ont., will build a \$500,000 storage and shipping center, Caledon area.

TORONTO, ONT.—Canadian S. K. F. Co. Ltd., 1057 Bay St., will build a \$1 million plant, Scarbrough; T. Pringle & Son Ltd., 485 McGill St., Montreal, Que., engineer.

MONTREAL, QUE.—Canadian National Railways, B. Wheelwright, chief engineer, 360 McGill St., will build \$2,465,000 warehouse buildings.

MONTREAL, QUE.—Molson Brewery Ltd., 1678 Notre Dame St. E., has awarded a \$550,000 contract to E. G. M. Cape & Co., 620 Cathcart St., for construction of a plant.

MONTREAL, QUE.—Canadian Oil Companies Ltd., 204 Richmond St. W., Toronto, Ont., will build a \$1.5 million plant at Terminal Plant, Notre Dame St. E.; R. T. Eyre, c/o owner, engineer.

QUEBEC CITY, QUE.—Chronicle-Telegraph Co. Ltd., Blade St., will build a \$250,000 newspaper plant and printery.

VAL D'OR, QUE.—Dulama Gold Mines Ltd., 330 Bay St., Toronto, Ont., will erect a \$125,000 concentrator.

PRICES OF LEADING FERROALLOY PRODUCTS

(Continued from Page 133)

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18%, and Si 53-59%). Contract, carload, lump, bulk 19.25c per lb of alloy, carload packed 20.05c, ton lot 21.55c, less ton 22.55c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 17.9c per lb of alloy, carload packed 19.1c, ton lot 21.0c, less ton 22.5c. Delivered. Spot add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.) Contract, ton lots 2" x D, \$1.40 per lb of contained Ti; less ton \$1.45, (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.) Ton lot \$1.28, less ton \$1.35. F.o.b. Niagara Falls, N. D., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract, \$160 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destination east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 3-4.5%). Contract, \$175 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

VANADIUM ALLOYS

Ferrovanadium: Open-Hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, \$2.90 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.). \$3. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.), \$3.10.

Grainal: Vanadium Grainal No. 1, 93c; No. 6 63c; No. 79, 45c, freight allowed.

Vanadium Oxide: Contract, less carload lots, \$1.20 per lb of contained V₂O₅, freight allowed. Spot, add 5c.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). Contract, 10,000 lb W or more, \$2.25 per lb of contained W; 2000 lb W to 10,000 lb W, \$2.35; less than 2000 lb W, \$2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, \$2.90 per lb of contained W; less than 1000 lb W, \$3.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloys: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l. lump, bulk 6.6c per lb of alloy, c.l. packed 7.35c, ton lot 8.1c, less ton 8.95c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, \$1.20 per lb of alloy. Less than 100 lb \$1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) \$1.20; Grade C (19% min. B) \$1.50.

Borasil: (3 to 4% B, 40 to 45% Si), \$6.25 per lb contained B, f.o.b. Philo, O., freight not exceeding St. Louis rate allowed.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 0.90 to 1.15%). Net ton to carload, 8c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Mn 5% max., Si 8% max., C 0.5% max.). Contract, ton lot, 2" x D, \$2.90 per lb of contained Cb, less ton \$2.95. Delivered. Spot, add 25c.

CMSZ Mixes: (No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%, Zr 0.75-1.25%, C 3.50-5%). Carload, 12 M x D, carload packed 19.0c per lb of material, ton lot 19.75c, less ton 21.0c. Delivered.

Sileaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, Boron 0.55-0.75%). Carload packed, 1" x D, 43c per lb of alloy, ton lot 45c, less ton 47c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, 1/2" x 12 M, 16.5c per lb of alloy, ton lots 17.50c, less ton 18.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%), C.l. packed, 17.00c per lb of alloy; ton lots 18.00c; less ton lots 19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%), C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

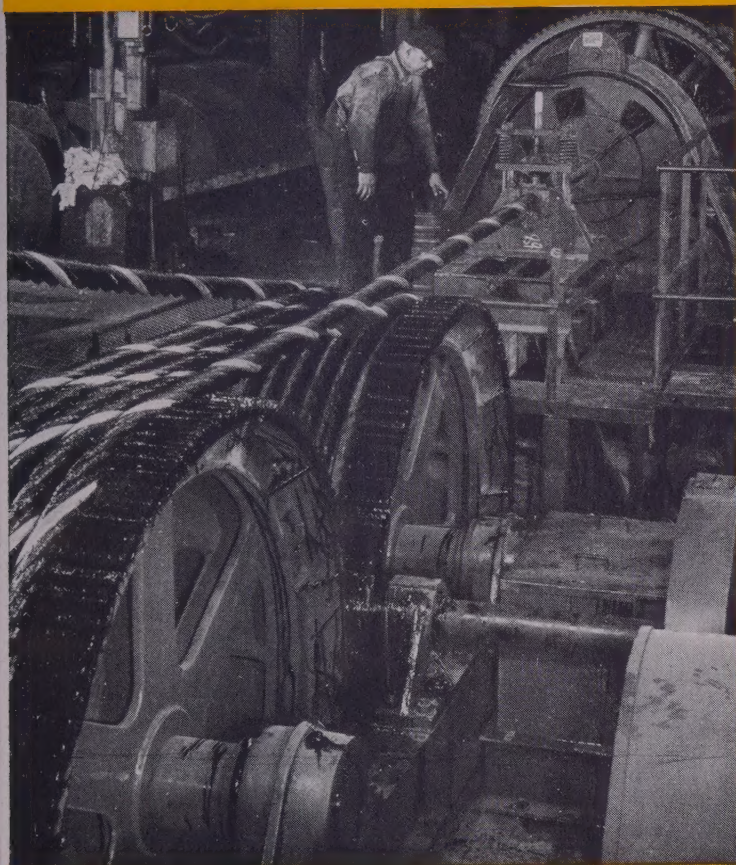
Simanal: (Approx. 20% each Si, Mn, Al). Packed, lump, carload 11c, ton lots 11.25c, smaller lots 11.75c per lb alloy; freight not exceeding St. Louis rate allowed.

Ferrophosphorus (23-25% based on 24% P content with unitage of \$3 for each 1% of P above or below the base); Gross tons per carload, f.o.b. sellers' works, Mt. Pleasant, or Siglo, Tenn.; \$65 per gross ton.

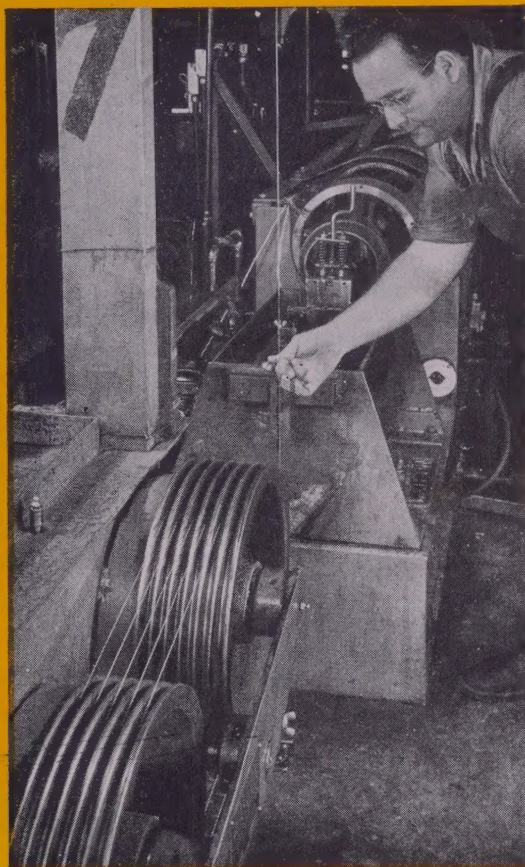
Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., furnace, any quantity \$1.10.

Technical Molybdenic-Oxide: Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., packed in bags containing 20 lb of molybdenum, 95.00c.

This photograph shows a 3 1/8" diameter Monarch Whyte Strand Wire Rope coming off a Macwhyte closing machine. Weight of this rope is approximately 16.65 pounds per foot. It has a strength of approximately 392 tons and is used for the digging line on large drag-line excavator with 35 cu. yd. bucket.



In this photograph is a 3/64" diameter Stainless Steel Cord coming off a Macwhyte closing machine. It weighs approximately 0.35 lbs. per 100 feet; has a strength of approximately 270 pounds, and is used for many small cord needs.



Whether you need

LARGE WIRE ROPE or SMALL WIRE CORD

You will get smoother operation and better service when you use the wire rope designed and manufactured to meet your requirements.

Macwhyte engineers are always glad to suggest the correct Macwhyte rope or cord best suited to your needs.

Just drop a card or letter to Macwhyte Company or your Macwhyte distributor.

MACWHYTE COMPANY

2912 Fourteenth Avenue Kenosha, Wisconsin
Manufacturers of Monarch Whyte Strand PREformed,
Internally Lubricated Wire Rope, Atlas Braided Wire
Rope Slings, Aircraft Cables and Assemblies, Monel
Metal and Stainless Steel Wire Rope.

Mill Depots: New York • Pittsburgh • Chicago
Minneapolis • Fort Worth • Portland • Seattle
San Francisco • Los Angeles

Catalog on request.

make your selection from

a thousand and one
WIRE ROPES
made by
MACWHYTE

Behind the Scenes...

STEEL

Vol. 125—No. 3

July 18, 1949

5000 Scoops Weekly

Used to be that news of "blessed events" was a commodity dealt in primarily by gossip columnists and within the family circle. Now that the world of commerce has recognized expectant mothers as a market, along with the teen-agers, newlyweds, etc., an energetic list house is prepared to supply 5000 names per week of the about-to-be's. In our book, that would take quite a bit of doing. As other similar organizations discover the gold in these lists, there's bound to be competition for the information. Such a thing, in our estimation, could go too far!

Poems of 1899

Half a century ago the Champion Rivet Co., Cleveland, advertised as follows:

"As we control its manufacture,
Our steel we know will never fracture.
And we our reputation stake,
On every rivet that we make."
Suitably embellished with an earnest young nineteenth century American swinging a sledge, this message leaves little doubt as to the sincerity of the company and the quality of its product.

Hik! Hik! It's Pink!

If you hanker to see pink elephants, you can now be accommodated in Style, according to Tico Inc., of Ann Arbor, Mich. Not only are they making a beautiful pink elephant for your own private viewing, but they are making it just as realistic as all-get-out by having the beast hic-

cup. The elephant accomplishes this feat in much the same way that it is accomplished by the brass rail set. He imbibes. Drinks, that is. You give him a jigger of the stuff and he will happily hiccough for eight to ten hours. He does it by means of his "mystery motor," and a good slug gets it all wound up. You can get one for only \$2.75, not including the "fuel" for the motor. Or, if you would prefer to see double, two for five bucks.

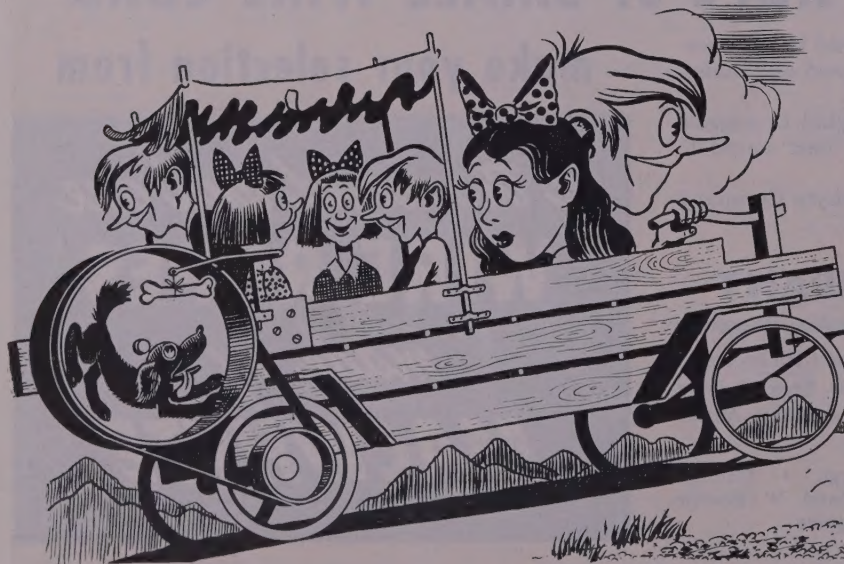
Up & Down the Mountains

That time's here again, and while you folks who are left read this, we are rolling south through the Old Dominion, up over the Skyline Drive, seeing the places where George slept, gazing at the f.f.v.'s and in general acting like tourists. Cmfwypp, our zinc-line camera man, has put his impression of our general appearance here on the page for your edification, and we think it's a good likeness, too. Whether we will look that happy upon our return is something else again!

Now's His Chance

While we are gone, the boss takes over. As in previous years, he will have his chance to come out from behind the scenes and lash out in print in all directions. We're leaving him with nothing but a vacant drawer to start on, so that he won't be influenced by any stray items which happen to be available.

Shradu



(Editorial Index—page 45)

BUSINESS STAFF

GEORGE O. HAYS
Business Manager

ADVERTISING

R. C. JAENKE
Advertising Manager

C. H. BAILEY
Service Manager

A. V. ANDERSON
Production Manager

New York:

E. W. KREUTZBERG, K. A. ZOLLNER
CALVIN FISHER, JR.

Pittsburgh:

S. H. JASPER, B. C. SNELL

Chicago:

L. C. PELOTT, V. G. BRETTMAN

Cleveland:

D. C. KIEFER, H. G. ROWLAND

W. L. POLAND

Los Angeles:

F. J. FULLER

CIRCULATION AND MARKET RESEARCH

J. W. ZUBER
Director

R. L. HARTFORD
Research Manager

H. E. METZNER
Circulation

G. R. EBERSOLE
Mail & List Service

Field Representatives:

C. A. PRICE, H. R. DUNNE, D. G. HEWITT
B. W. SCHEINERT

MAIN OFFICE

Penton Building, Cleveland 13, Ohio
Main 8260

BRANCH OFFICES

New York 17 16 East 43rd St.
Murray Hill 2-2581

Chicago 11 520 North Michigan Ave.
Whitehall 4-1234

Pittsburgh 19 2806 Koppers Bldg.
Atlantic 3211

Los Angeles 4 130 N. New Hampshire Ave.
Fairfax 1758

London: 2 Caxton St., Westminster, S.W.1

Published by THE PENTON PUBLISHING Co., Penton Building, Cleveland 13, Ohio; E. L. SHANER, Chairman and Treasurer; G. O. HAYS, President; R. C. JAENKE, Vice President; F. G. STEINEBACH, Vice President and Secretary; E. L. WERNER, Assistant Treasurer. Member, Audit Bureau of Circulations; Controlled Circulation Audit, Inc.; and National Publishers' Association.

Published every Monday. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year \$10; two years \$15; all other countries, one year \$18. Single copies (current issues) 35c. Entered as second class matter at the postoffice at Cleveland, under the Act of March 3, 1879. Copyright 1949 by the Penton Publishing Co.

Editorial Staff on Contents Page



STEEL